


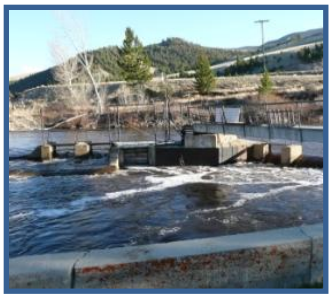

FINDING OF NO SIGNIFICANT IMPACT

and

ENVIRONMENTAL ASSESSMENT

for the

Big Hole River Diversion Dam

in

Silver Bow and Beaverhead Counties, Montana

February 12, 2010

DOWL HKM

FINDING OF NO SIGNIFICANT IMPACT
for
Big Hole River Diversion Dam
in
Silver Bow and Beaverhead Counties, Montana

The City and County of Butte-Silver Bow (BSB) has determined that the Preferred Alternative, as described in the attached Environmental Assessment (EA) dated February 4, 2010, will have no significant impact on the natural and physical or human environment. This Finding of No Significant Impact (FONSI) is based on the February 4, 2010 EA and information obtained during the public and agency coordination process. After independent evaluation of the EA, BSB concluded that the EA adequately and accurately discusses the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. The EA provides sufficient evidence and analysis for determining that an Environmental Impact Statement (EIS) is not required. BSB takes full responsibility for the accuracy, scope, and content of the attached February 4, 2010 Environmental Assessment.

Reviewed & Approved for Distribution:

Dan Dennehy
City and County of Butte-Silver Bow
Director of Public Works

Date: 2/12/10

Rick Larson
City and County of Butte-Silver Bow
Operation Manager – Utilities Division

Date: 2/12/10

The following persons may be contacted for additional information concerning this document:

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Abstract: The proposed project is a diversion dam replacement initiated by the City and County of Butte-Silver Bow. The Proposed Action is to replace the existing Big Hole River diversion dam and intake structure in order to provide a reliable source of potable water for the Butte service area. The Preferred Alternative provides a reliable diversion system, improves safety at the site for maintenance personnel and recreational users, and improves boat and fish passage.

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Appendix A: NEPA/MEPA Coordination Process

The proposed project, fully defined in the attached Environmental Assessment (EA), has been coordinated with the appropriate federal, state, and local agencies in compliance with the requirements of the National Environmental Policy Act (NEPA) and the Montana Environmental Policy Act (MEPA).

Availability of EA for Review and Comment

The City and County of Butte-Silver Bow (BSB) issued a Public and Agency Review Draft EA in December 2009, and a Notice of Availability was issued to the Montana Standard newspaper.

Emails were sent to an additional 18 people and organizations that either attended previous public meetings or expressed an interest in the project.

Copies of the Draft EA were made available for public review at the following locations:

- Butte Public Library (226 W. Broadway)
- Butte-Silver Bow Public Works Office (126 W. Granite)

The Draft EA was available online at http://www.hkminc.com/big_hole_river/index.htm and print copies of the Draft EA were also available upon request.

A CD containing an electronic version of the Draft EA was mailed to all agencies noted in the Distribution List included on pages 72 and 73 of the EA. Additional CDs containing the Draft EA were mailed to various individuals upon their request.

The public review and comment period began on December 10, 2009 and ended on January 15, 2010.

Public Hearing

Two Public Hearings were held to present the Preferred Alternative and take comments on the Draft EA. The Hearings were held on December 15 and 16, 2009 at the Silver Bow County Courthouse in Butte, Montana and Grange Hall in Divide, Montana, respectively. Ten people attended the hearing in Butte, and nine people attended the hearing in Divide.

Comments Received

Thirty-seven verbal comments were received at the Hearings, and 21 comments were submitted in writing during the formal comment period. These comments and the formal responses developed by BSB are contained in Appendix C.

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Appendix B: Edits and Corrections to the EA

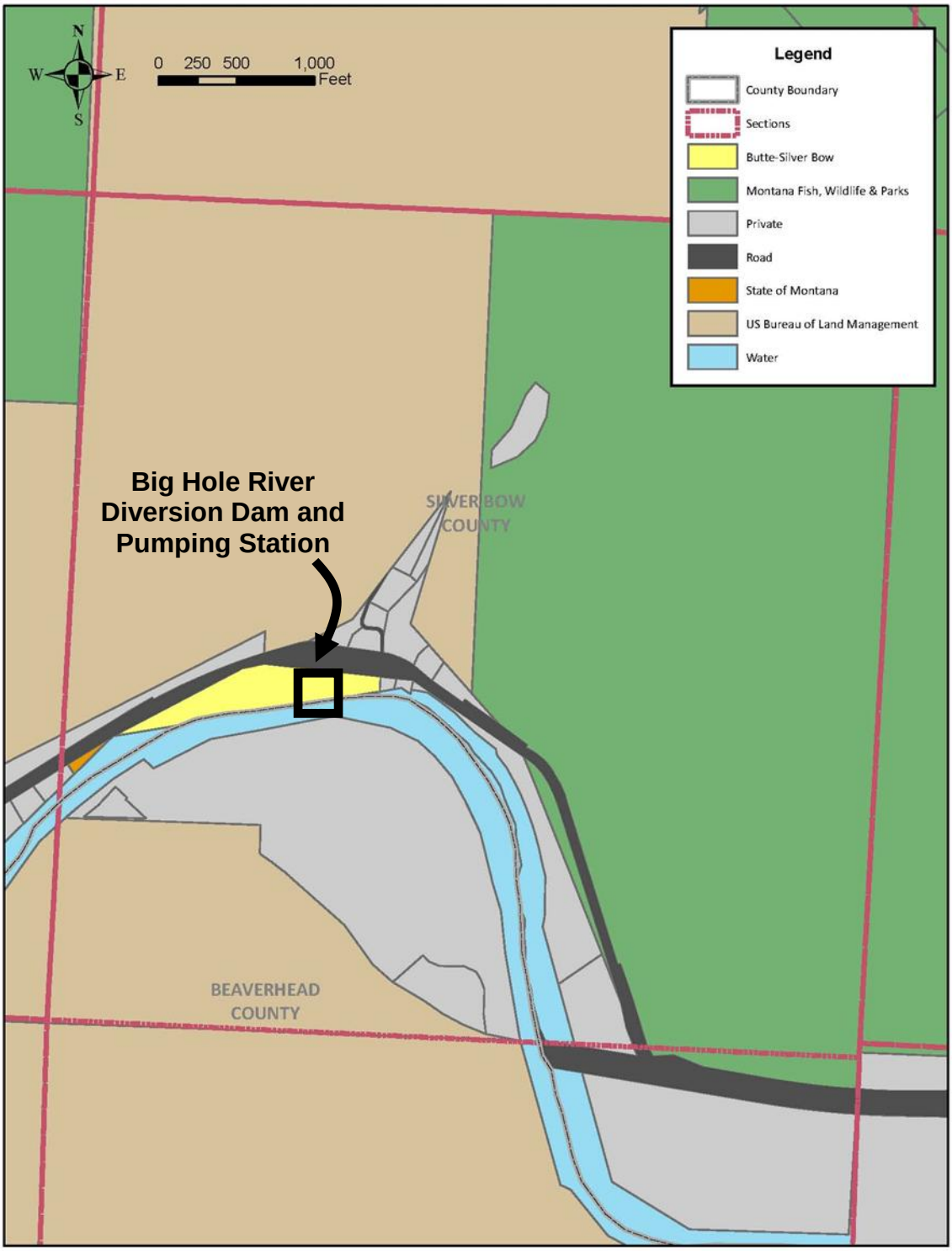
The edits and corrections listed in Table B.1 are to be considered part of the approved Environmental Assessment (EA) prepared for this project and are intended to provide further clarification in response to comments received.

The edits are identified by their location in the EA, the type of edit made, and a depiction of the edit made to the text.

Table B.1 Edits and Corrections to the Big Hole River Diversion Dam EA

Location	Action	Edit
Page 15	Text correction	In 19941995 and 1996, new pumps were installed in the existing pump house, however bedrock conditions were encountered during pump installation, preventing the pumps from being installed at the proper desired elevations to match with the available water surface elevation of the existing diversion dam and intake structure.
Page 15	Insert new text	This EA will consider both Phase I and Phase II of Alternative 3, although the timing of Phase II is dependent on funding. It should be noted that the new pump house has been developed in association with Alternative 3 in order to minimize iterative preliminary design efforts, but should be considered as a Design Option that could be associated with any of the Build Alternatives. A new pump house would be just as necessary and would provide the same benefits under all of the Build Alternatives.
Page 21, Table 2.4, First bullet under Intake / Point of Diversion for Alternatives 2 and 3	Remove text	• New primary intake located on north bank with slotted screen to block excessive sediment and debris (either butterfly gate valve or Obermeyer gate valve)
Page 21, Table 2.4, First bullet under Intake / Point of Diversion for Alternative 5	Remove text	• New primary intake approximately 450 feet upstream of existing facility with slotted screen to block excessive sediment and debris (either butterfly gate valve or Obermeyer gate valve)
Page 26	Text correction	Water Treatment Plant for proper treatment, and then piped back up to Butte.
Page 31, Section 3.1.6, Wildlife	Insert new text	Anecdotal evidence suggests that rattlesnakes have also been observed near the project site.

Location	Action	Edit
Page 41, Figure 3-5	Replace existing figure with revised figure	See revised Figure 3-5 below.



Location	Action	Edit
Page 48, Section 4.24, Effects of Action Alternatives, first full paragraph	Insert new text	Based on studies that indicate habitat connectivity is crucial in sustaining fluvial life histories of grayling, whitefish, and both native and non-native species of trout, t~~T~~he re-establishment of fish passage at the Big Hole Dam is considered a substantial benefit to fish populations utilizing this portion of the watershed. It should be noted, however, that there are many uncertainties regarding the long-term effects that removing the diversion dam may have on the arctic grayling. At this time, it is unknown whether removal of the barrier will expedite non-native colonization in the upper Big Hole watershed, and if providing passage will result in an increase in competition with and predation of grayling by non-native species.
Page 48, Section 4.24, Effects of Action Alternatives, second full paragraph	Insert new text	Under Alternatives 3 and 4, the new dam structure would be set approximately 145 feet upstream of the existing dam. The crest of the new dam would be at nearly the same elevation as the existing dam, and would maintain a similar backwater pool upstream of the new dam crest. The length of the existing backwater pool would be shortened by 145 feet (approximately 20 percent of the existing pool length), which is equivalent to the distance between the existing dam and the proposed location of the new dam. It should be noted that while the footprint of Alternatives 3 and 4 would equally impact the upstream pool, Alternative 4 would require regular instream work within this pool to maintain the proposed floating intake.
Page 48, Section 4.24, Mitigation for Action Alternatives, above first full paragraph	Insert new text	As noted previously, it is unknown how this project will impact arctic grayling. BSB will continue to coordinate with USFWS and FWP and would consider measures to retrofit the diversion structure should a selective capture program or fish migration study be considered by these agencies in the future.
Page 53, Section 4.3.2, Mitigation for Action Alternatives, third bullet	Text correction	Appropriate mitigation of impacts to the Big Hole Pump Station could be limited to exterior character-defining features.
Page 53, Section 4.3.2, Mitigation for Action Alternatives, above last paragraph	Insert new text	BSB will develop and implement a plan for future preservation of the historic Pump House which maintains the building such that demolition by neglect does not occur. BSB will work with SHPO and HPC to develop an appropriate plan.

Location	Action	Edit
Page 55, Section 4.3.5, Effects of Action Alternatives, below second full paragraph	Insert new text	Under all of the Action Alternatives, boating and fishing access to the Big Hole River may be temporarily restricted in order to ensure safety during construction activities, expedite the construction schedule, and reduce the instream construction period.
Page 55, Section 4.3.5, Mitigation	Insert new text	~~None required.~~ BSB will coordinate with FWP and local recreational users regarding potential closure of the river to minimize impacts to the extent possible.
Page 56, Section 4.4, Past Projects: Effects of No Action	Text correction and addition	In the event of dam failure, a full emergency repair would be difficult, costly, and would negatively impact the water customers in Butte as well as have the potential for negative environmental impacts due to the emergency nature of the repair.
Page 59, Table 4.4, Impact to Vegetation under Alternative 3	Text correction	Permanent impact of ~~1.0~~ 0.13 acres; temporary impact of ~~0.13~~ 0.5 acres for staging area
Page 59, Table 4.4, Impact to Vegetation under Alternative 4	Text correction	Permanent impact of ~~1.0~~ 0.12 acres; temporary impact of ~~0.12~~ 0.5 acres for staging area
Page 59, Table 4.4, Impact to Fisheries under Alternative 2	Text correction	New dam would continue to impeded fish passage; screened intake may reduce fish losses; project may temporarily increase ~~in~~ turbidity
Page 59, Table 4.4, Impact to Fisheries under Alternative 3	Insert new text	Rock weir would improve fish passage but shorten the existing upstream pool by 145 ft; screened intake may reduce fish losses; project may temporarily increase ~~in~~ turbidity
Page 59, Table 4.4, Impact to Fisheries under Alternative 4	Insert new text	Rock weir would improve fish passage but shorten the existing upstream pool by 145 ft; screened intake may reduce fish losses but would require instream maintenance work in upstream pool; project may temporarily increase ~~in~~ turbidity
Page 59, Table 4.4, Impact to Fisheries under Alternative 5	Insert new text	Rock weir would improve fish passage but shorten the existing upstream pool by 630 ft; screened intake may reduce fish losses; project may temporarily increase ~~in~~ turbidity
Page 61, Table 4.4, Impact to Socio-Economic Conditions under Alternative 1	Text correction	~~No effect~~Existing dam would continue to be a safety hazard to maintenance personnel and recreational users; failure of dam would threaten economic activity in Butte

Location	Action	Edit
Page 65, Section 5.1, third paragraph under Goal 4	Insert new text	The re-establishment of fish passage at the Big Hole Dam is considered a substantial benefit to fish populations utilizing this portion of the watershed, although it is unknown how unrestricted passage will impact arctic grayling.
Page 65, Section 5.1, second full paragraph	Insert new text	Of the four proposed Action Alternatives, Alternative 3 is considered the least impactful as its entire footprint is located within the historical footprint of the existing dam. ~~It would provide fish passage~~Of the alternatives providing fish passage, it would result in the fewest impacts to the upstream pool, which is considered important fishery habitat~~ and would require the least amount of new fill in the river~~. This alternative best meets Goal 6, while Alternatives 2, 4, and 5 are less favorable with ~~more~~ greater impacts to fisheries habitat ~~impact, larger~~ and expanded weir and intake footprints ~~and more fill in the river~~.
Page 67, Table 5.1, Goal 6, Alternative 3	Insert new text	This alternative would remove the existing dam structure. The new structure footprint is located within the historical footprint and would result in the fewest impacts to fisheries habitat of the three alternatives providing fish passage. Alternative 3 would not require a point of diversion change
Page 67, Table 5.1, Goal 6, Alternative 4	Insert new text	Alternative would remove existing dam, but require instream maintenance work in the upstream pool and require new fill material for ~~rock weir~~construction of the floating intake ~~located well~~ outside the historical footprint. This alternative would require a change in the point of diversion
Page 67, Table 5.1, Goal 6, Alternative 5	Insert new text	Alternative would remove existing dam, but substantially encroach upon the existing upstream pool and require new fill material for rock weir located well outside the historical footprint. This alternative would require a change in the point of diversion
Page 67, Table 5.1, Goal 8, Alternative 3	Text correction	~~High total cost ($9.5 million), but m~~Moderate cost ~~for Phase I~~ ($5.1 million)~~**~~
Page 67, Table 5.1, Footnote	Insert new text	*Estimates include costs associated with design, environmental compliance and permitting, and construction. ~~**~~Phase II would cost approximately $4.4 million; construction of Phase II is dependent on funding availability and is considered a Design Option that could be associated with any of the Build Alternatives.

Location	Action	Edit
Page 69, Section 5.1, Preferred Alternative	Insert new text	As discussed in this section and as shown in Table 5.1, Alternative 3 is the only proposed Action Alternative able to meet all of the Project Goals. Phase I of Alternative 3 would ensure improved system reliability, reduced maintenance and icing problems, improved safety, and improved fish and boat passage. Alternative 3 would not require a permit for a change in point of diversion, eliminating the need for a potentially lengthy permitting process and the risk of re-adjudication of BSB's existing water right. Additionally, of the alternatives providing fish and boat passage, Alternative 3 would result in the fewest impacts to the upstream pool, which is considered important fishery habitat. Lastly, ~~Phase I of~~ Alternative 3 ~~would require the least amount of new fill material in the Big Hole River and~~ would be the least costly when comparing Build Alternatives independent of the Pump House Design Option. ~~Lastly, the second phase of Alternative 3 would provide an additional operational benefit over other alternatives through construction of a new pump house, which would enable the placement of new or existing pumps at proper elevations to eliminate pump cavitation.~~ Because Alternative 3 is best able to meet the Purpose and Need and the Project Goals, it has been identified as the Preferred Alternative.
Page 69, Section 5.1, Design Options and Other Refinements	Insert new text	11. Consideration of option to provide boat portage 12. Consideration of option to accommodate selective fish capture 13. Consideration of addition of USGS Gauging Station 14. Consideration of addition of fisheries tracking antennae
Page 70, third bullet	Text correction	Clean Water Act Section 401 Water Quality Certification from ~~USCOE~~ USACE and DEQ

Location	Action	Edit
Page 76, last paragraph	Text addition	Public Hearings were held at the Council Chambers located in the Butte-Silver Bow Courthouse on December 15, 2009 and at the Grange Hall in Divide, MT on December 16, 2009. The meetings were advertised in the Montana Standard newspaper on November 25, December 2, and December 9, 2009 (see Appendix K). The meetings took place from 6:00 p.m. to 9:00 p.m. Ten people attended the hearing in Butte, and nine people attended the meeting in Divide. The meeting format included a formal presentation followed by a question and answer period. The purpose of the hearings was to discuss the alternatives screening process, present the Preferred Alternative, and discuss anticipated project impacts, as documented in the Public Review Draft Environmental Assessment. Following the formal presentation, members of the public commented on a number of aspects of the project, including debris and ice flow; size, function, reliability, and construction of the Preferred Alternative and its various components; borrow material; permitting timeframes; temporary and permanent impacts; impact mitigation; flow and velocity; water rights; recreational access during construction; and construction timing. The newspaper advertisement for the hearings is included in Appendix K; a complete list of comments and formal responses is included in the Finding of No Significant Impact (FONSI). ~~Summary to be included following the close of the public and agency comment period.~~

Appendix C: Comments and Responses

Paraphrased comments provided at the two Public Hearings and copies of written comments received during the formal comment period are presented on the left side of the following pages. Responses to these comments developed by BSB following the close of the formal comment period are contained on the right side of each page. Comments are presented in the order they were received, and each is numbered sequentially. The response to each comment is identified with the number corresponding to the comment.

Verbal comments provided at the Public Hearings held on December 15 and 16, 2009 have been paraphrased in the table below. Formal responses have been developed by BSB subsequent to the Hearings.

Comment: A	Formal Response: A
Roy Mazzi: i. Will the proposed dam provide enough head? ii. When will the new pump come in? iii. Will construction restrict water flow to Butte? iv. What happens to the pump house? v. What is the life of the new dam?	i. The proposed dam will result in improved upstream water surface elevations and provide sufficient head for the existing pumps. ii. The new pump house will be constructed as funding allows. iii. The Big Hole River facility will remain operable during construction activities. There will be short durations when the system will be shut down to allow for connections of new features to existing features, however during these times, BSB will use alternative water sources to maintain water supply to its customers. iv. The existing pump house will remain intact due to its historical value. v. The life of the new dam is unknown but should be approximately 70 to 100 years with routine and periodic maintenance.
Comment: B	**Formal Response: B**
Scott Reynolds: i. How will the diversion dam be able to handle debris over the crest of the dam? ii. How wide is the boat channel at 500 cfs?	i. Most debris will travel downriver during periods of high flow. During these periods, water will overtop the new dam crest and debris should clear the rock weir structure. In the event that debris becomes caught on the diversion dam, BSB can manually remove during an ensuing low flow period. ii. At a flow of 500 cfs, the boat channel would be 30 to 40 feet in width depending upon flow rates through the boat chute and through the intake chute.

Comment: C	Formal Response: C
Casey Johnston: i. There is a need for a flow meter at the site since the nearest flow meter is at Melrose.	i. A USGS gauging station will be considered during final design efforts.
Comment: D	**Formal Response: D**
Scott Reynolds: i. How does the inflatable dam work?	i. The inflatable dam is a rubber bladder mounted to the floor of the intake chute that supports a steel weir plate. An air supply controls the pressure in the bladder, which adjusts the steel plate up or down to maintain an upstream water surface elevation over a range from the dam crest elevation to the floor of the intake chute (full inflation to full deflation). When fully deflated, the flow line of the chute would allow unrestricted water passage past the intake screens; when fully inflated, the gate would rise to the dam crest level, creating an increase in the upstream water surface elevation equal to the dam crest before overtopping. The gate elevation could be varied dependent upon instream flows such that adequate volume and velocity of water could pass through the intake chute to enable adequate diversion, clearing of screens, and passage of ice and debris over the top of the gate, yet could be adjusted to enable flows over the new dam to maintain adequate fish and boat passage.

Comment: E	Formal Response: E
Jim Jarvis: i. Is there a need for a settling pond?	i. Historically, sediment loading levels in the river are the highest during runoff events, either snow melt or rain storms. This also coincides with the highest river flows. Under existing conditions, the river flows simply overtop the upstream weir and flood the existing settling basin, thereby rendering it ineffective for sediment removal due to short circuiting of flows straight through. Although the settling basin is effective in removing sediment during periods of lower flows, the need is minimal because the sediment loading levels in the river are much lower during these low flow periods. Additionally, the proposed intake structures will be fitted with screens that are sized to preclude debris and trash from entering the system. Screens and screen materials have evolved substantially in terms of availability, materials of construction, and technological advancements since the original construction of the dam and intake structure, and are very efficient at sediment and debris removal in a river setting. For these reasons, a settling pond is not included in the design of the new facility.

Comment: F	Formal Response: F
Jim Shive: i. Why does a concrete wall exist on the north side of the bank?	i. The concrete wall on the north side of the bank was built a century ago when the existing diversion dam was built and served as erosion protection and channel containment.
ii. Will this existing concrete wall be repaired?	ii. The existing concrete wall is in poor condition and will be replaced when the proposed diversion dam is constructed.
iii. Where are the two potential quarries located that will supply borrow material for the project?	iii. The two potential quarries are located in the vicinity of the diversion dam on private property.
iv. How will the borrow material be extracted from the quarry?	iv. The material will most likely be gathered from surface deposits and outcroppings.
v. What permits are needed?	v. It is anticipated that the following permits will be needed for this project: • SPA 124 Permit from FWP • Federal Clean Water Act Section 404 Permit from USACE • Clean Water Act Section 401 Water Quality Certification from USCOE and DEQ • Short-term Water Quality Standard for Turbidity (318 Authorization) from DEQ • MPDES General Permit for Storm Water Discharges Associated with Construction Activity from DEQ • MPDES General Permit for Discharges Associated with Construction Dewatering from DEQ • Montana Land-Use License or Easement on Navigable Waters from DNRC • Floodplain Development Permit from Silver Bow and Beaverhead County Floodplain Administrators • Demolition Permit from the Butte HPC
vi. When will the Army Corp of Engineers 404 Permit be filed?	vi. The 404 Permit is planned to be filed in March 2010.

Comment: G	Formal Response: G
Scott Reynolds: i. What mitigation will be conducted with State Government and with the Corps of Engineers? ii. How much is the NRDP paying for mitigation? iii. Can NRDP pay for mitigation?	i. BSB will coordinate with all state and federal regulatory agencies having jurisdiction over this project in order to identify and implement appropriate mitigation measures. Anticipated mitigation measures are identified in the EA document, and will be finalized through coordination with agencies during the permitting process. ii. Based on the contractual arrangement between NRDP and BSB, NRDP funds will not be used for mitigation associated with this project; mitigation activities will be funded solely by BSB through matching funds. iii. See previous response.
Comment: H	**Formal Response: H**
Jon Trudnowski i. How big will the individual diversion dam rocks be? ii. How far will the dam be imbedded in the river bottom?	i. The largest rocks will likely be 2 to 3 feet in diameter. These rocks will be angular in shape and the entire diversion dam structure will be grouted together. ii. The dam will probably be imbedded approximately two to three feet into the river bottom. Undercutting of the new dam or channelization of water flow under the dam is not anticipated to be a problem, given the expanse of the structure and the downstream apron. The proposed structure is different than a single dam with a footing where undercutting and piping beneath the footings and structure is possible.

Comment: I	Formal Response: I
Scott Reynolds: i. What will be the velocity of the flow from the crest to the top pool? ii. How fast will the flow move through the dam?	i. The final design criteria will focus on channel width, slope, and configuration such that velocities through the fish and boat chute will be in the range of 6 feet per second (fps) at flows of less than 1,000 cfs. Spot instantaneous velocities may be higher than this. The velocities resulting from the final design efforts will be within the cruising and darting speed ranges of fish species found in the Big Hole River. ii. Velocities from upstream to downstream of the dam are heavily dependent on river flow volumes. Generally, the new dam will result in overall velocities in the range of 6 feet per second at flows less than 1,000 cfs.
Comment: J	**Formal Response: J**
Roy Mazzi: i. How much water can be diverted out of the dam?	i. BSB has an instantaneous water right of 21.26 cfs; this water right will not differ with the new facility.

Comment: K	Formal Response: K
Scott Reynolds: i. How much will the daily water rights change with the placement of the new diversion dam? ii. How much higher in elevation will the proposed dam be? iii. What is the elevation of the crest of the proposed dam? iv. What is the elevation of the toe of the dam?	i. BSB's water right will not change; BSB will extract the same amount of water from the Big Hole River as before. ii. The crest of the new diversion dam is estimated to be one foot higher in elevation than the existing dam. The final design has yet to be completed, however preliminary designs have determined the crest of the new dam to be at approximately elevation 5419.5 feet and the crest of the new boat channel to be at approximately elevation 5417.5 feet. The existing dam crest is at elevation 5417.8 feet. iii. The elevation of the crest of the proposed dam will be 5,419.5 feet and the boat and fish passage crest will be 5417.5 feet. iv. The elevation of the toe of the dam is 5,414.0 feet.
Comment: L	**Formal Response: L**
Marty Hovan: i. What size in microns will the intake screen be?	i. A 10 micron intake screen will be used, with approximately one-tenth inch opening size.
Comment: M	**Formal Response: M**
Jon Trudnowski: i. Will there be a timer to blow air that will then remove debris from the screen?	i. Yes, a timer will trigger an air bubbler system to periodically release a volume of air that will remove any debris from the face of the screen.

Comment: N	Formal Response: N
Scott Reynolds: i. In the Environmental Assessment, there should be a section that documents construction impacts relating to a potential river closure. ii. How long can BSB close the river? iii. Is BSB considering measures as an alternative to river closure? Will BSB maintain boating and fishing access during construction?	i. As noted in Appendix B of the FONSI, the EA now discusses the potential for a temporary restriction in recreational access during construction activities. ii. BSB does not have the authority to close the river; the bed and banks of the river are owned by the State of Montana. The FWP Commission has exclusive authority to close a section of the Big Hole River. iii. BSB will attempt to expedite construction activities and minimize impacts to recreational users. As the project progresses, BSB will coordinate with regulatory agencies and recreational users regarding a potential river closure.
Comment: O	**Formal Response: O**
Steve Hess: i. BSB should make sure the staging area (including all borrow material) is outside the floodplain to minimize impacts during spring runoff.	i. BSB will ensure the staging area is located outside the floodplain.
Comment: P	**Formal Response: P**
Jim Matteucci: i. Why is the dam staying in the current location?	i. Permitting and water right considerations dictated that the intake remain in the existing location.
Comment: Q	**Formal Response: Q**
Jack Kambich: i. How big is the pipe going through the new dam going to be?	i. The pipe will be 42 inches to ensure a low velocity and minimize head losses.

Comment: R	Formal Response: R
Bill Johnson: i. How wide will the chute in the middle of the new dam be?	i. The boat/fish passage chute will be approximately 20 to 25 feet wide at the bottom and slope outwards to about 30 to 35 feet wide at the crest of the dam. The chute will be designed so that boaters will be able to float through with minimal restrictions.
Comment: S	**Formal Response: S**
Jack Hendrickson: i. What type of debris will be in the river at a flow of 1000 cfs?	i. At a flow of 1,000 cfs, debris would typically include leaves and small twigs; these materials should easily pass over the dam.
Comment: T	**Formal Response: T**
Jack Hendrickson: i. How wide is the main boat channel?	i. The bottom of the channel will be 20 to 25 feet wide.
Comment: U	**Formal Response: U**
Al Lefor: i. What will happen to the rock wall on the south side of the river?	i. The wall will be photographed to document its current state. There has been some discussion of a kiosk to display the pictures. The new dam would have a new concrete retaining wall along the north river bank that would blend into the existing wall with upstream and downstream channel bank protection that will be stabilized to maintain the communities of plant species that grow in the area.

Comment: V	Formal Response: V
Jack Kambich: i. What about leaves and debris on the screen of the new dam?	i. Leaves should remain on the water surface. The screens are located at the bottom of the intake chute and are intended to prevent large debris from entering the system. A backflushing system will periodically clean the intake screens.
Comment: W	**Formal Response: W**
Bill Johnson: i. Is there a way to access the dam and intake area to help someone in trouble?	i. A concrete walkway will provide access to the intake area. The intake chute is not intended for use by boaters.
Comment: X	**Formal Response: X**
Jack Kambich: i. What is the rubber dam made of? ii. How reliable is the rubber bladder? iii. What is the cost of the rubber dam?	i. The bladder is constructed of multiple layers of butyl rubber, Kevlar with polyester cord reinforcements, and an EPDM shell similar to a tire. ii. The rubber dam would have a manufacturer's guarantee. BSB successfully uses one at Basin Creek Dam. iii. The cost of a rubber dam is approximately $70,000 to $80,000, with additional costs for control systems and degrees of automation.
Comment: Y	**Formal Response: Y**
Jack Kambich: i. Where is the rubber dam controlled from?	i. At the site, there will be an air compressor and supply tank that is on a valved air supply line controlled by air supply valves and solenoids that will enable an operator to adjust the dam by either inflating or deflating the bladder.

Comment: Z	Formal Response: Z
Kay Jensen: i. Where will the water go while the new dam is being built?	i. The dam will be built in stages. A coffer dam will be installed on the north side to divert the river to the south while the first segment of the existing dam is removed and the new intake is constructed. Another coffer dam will then be installed to shift the river to the north side through the intake chute such that removal and construction of the south side of the new dam can be accomplished. This task will be performed while the river levels are low.
Comment: AA	**Formal Response: AA**
Mark Kambich: i. How long will the process take?	i. It is anticipated that the instream construction period will extend approximately two to three months, while the full project construction period will extend approximately four to five months. Construction will be staged.
Comment: BB	**Formal Response: BB**
Jack Kambich: i. How much area is being affected by the construction?	i. The project will impact an area approximately 250 feet long by 250 feet wide. Approximately 5,000 yards of rock will be used.
Comment: CC	**Formal Response: CC**
Kay Jensen: i. How are the rocks placed into the river?	i. The rocks will be placed with an excavator.

Comment: DD	Formal Response: DD
Steve Hess: i. What if there is a big snowpack in July?	i. The Contractor may have to implement longer work days and weeks to maintain the construction schedule should the project suffer a delayed start due to a large or late runoff.
Comment: EE	**Formal Response: EE**
Jack Hendrickson: i. What about ice flow?	i. Ice will continue to form in the river. The design concept of the dam will be to narrow the passage ways so that the velocity will increase. This increase in velocity will assist in sluicing the slush ice through the boat and fish passage chute and keep the ice movement in the middle of the river and away from the intake chute and screen galley. Additionally, the intake screens will be submerged to minimize the effect of ice blocking the screens.
Comment: FF	**Formal Response: FF**
Marty Hovan: i. Boat passage during construction needs to be restricted during the 2 – 3 months of major construction time.	i. BSB will coordinate with FWP and recreational users regarding closure of the river during instream construction activities.
Comment: GG	**Formal Response: GG**
Al Lefor: i. Restricting boat passage during the construction period shouldn't be a problem when people realize that the river will be better when the project is done.	i. BSB will coordinate with FWP and recreational users regarding closure of the river during instream construction activities.

Comment: HH	Formal Response: HH
Mark Kambich: i. Are environmental groups opposing this project?	i. No, BSB has not received comments in opposition to the project from any environmental group.
Comment: II	**Formal Response: II**
Kay Jensen: i. Where will the rock that will be used for the dam come from?	i. This has not been finalized yet. Some of the material will be derived from excavation for the new dam and some will need to be imported. BSB has approached adjacent landowners to identify potential borrow sources.
Comment: JJ	**Formal Response: JJ**
Jack Kambich: i. Will the dam wear?	i. Yes, the dam is expected to largely resist weathering and wear. Sample rocks from the potential borrow sources have been tested for freeze/thaw and degradation properties and appear to meet the requirements for abrasion and wear resistance. It is expected that the rock weir dam will weather better than a traditional dam constructed of rebar and concrete.
Comment: KK	**Formal Response: KK**
Jack Kambich: i. How deep is the old dam in the river?	i. The existing dam footings sit approximately six feet below the river bed.

The following comments were submitted in writing during the formal public comment period (12/10/09 – 1/15/10).

Comment #1	Response #1
From: Charlie O'Leary [mailto:staghornranch@gmail.com] **Sent:** Monday, December 14, 2009 9:59 PM Dan and Paul, I will not be in town to attend the public hearing on the Big Hole Diversion Dam Tuesday, but would appreciate it if my comments here could be included in any record being kept. As you know I have been involved in the replacement of this worn out piece of our water infrastructure for several years. It is without a doubt the weakest link in our entire water system for B-SB, and therefore the weakest link in our economic development program. Without a 100% dependable water supply for the residents, schools, medical facilities, and businesses of Butte Silver Bow, we cannot offer new business entities a dependable place to be. We must get this dam replaced as soon as possible followed by the completion of the water transmission line replacement project and other recommendation found in our Water Master Plan. Only then will Butte be totally comfortable in calling itself a first class city. The efforts of the B-SB Executive branch, the Public Works Dept, the Water Utility Division, and many individual employees are to be commended in this long and expensive process. I wish to go on record as 100% in support of any and all measures taken toward the completion of the Diversion Dam Project. Charlie O'Leary, Commissioner District 5	Thank you for your comments. BSB appreciates your support for this project. The project team intends to move forward as quickly as possible in order to replace the existing diversion dam with a new structure that will improve system reliability, safety, and passage at the site.

Comment #2

Public Hearing
December 15, 2009
6:00 P.M.

BSB Invites Your Comments:

1) If the pumphouse can be moved & lowered, is there a need for a dam to build up head?

2) Can the existing irrigation canal at the site be utilized as a point of diversion

To receive further project information, please provide your name and address:

Name: Jim Jarvis

Address: jjarvis@bsb.mt.gov

Please leave your comments with Project Team staff at the meeting, or mail to:

Dick Talley, P.E., Project Manager
DOWL HKM
PO Box 3588
Butte, MT 59702
dick.talley@hkminc.com

Please indicate comments are for the Big Hole River Diversion Dam project and submit comments by **January 15, 2010.**

Response #2

Thank you for your comments.

1) Although the new pump house may consider locating the pumps at a lower elevation as compared to their existing location, the pumps cannot be placed at an elevation lower than the riverbed; accordingly, a diversion dam is still necessary to provide sufficient head.

2) In the interest of avoiding re-adjudication of existing water rights or new point of diversion permitting requirements, BSB would not utilize a private irrigation canal, ditch, conveyance, or point of diversion for this project.

Comment #3

From: Jack Kirkley [mailto:j_kirkley@umwestern.edu]
Sent: Tuesday, December 15, 2009 5:46 PM

Dear Mr. Talley:

I'm very glad to hear that there are plans for rebuilding and modifying the outdated "check dam/ diversion dam" structure at Divide.

As a canoeist, I learned long ago that there is no more dangerous river obstruction than a check dam that stretches from bank to bank and creates an almost inescapable hydraulic effect on its downstream side where the dropping water holds in any buoyant object. like a person with a life vest.

A field demonstration by the Ravali County Search and Rescue, which was part of the Beaverhead EMS training program in the summer of 2008, clearly demonstrated the "death trap" aspect of that existing diversion dam structure.

A local resident who lives just upstream (on the north bank) from that dam, told me that in addition to the double fatality (2 women in a raft in a group who tried to run the dam back in 1999 or 2000?), there have been a substantial number of other drownings caused by that structure.

From a design perspective, I cannot understand why such a "check dam" or "diversion dam" would not be built with the downstream side filled in as a long, sloping incline, starting from the lip of the dam, and perhaps extending 20 feet downstream as it slopes downward to the natural river bed.

Such a design, except perhaps during the most extreme flood stage conditions (?),would prevent the river hydraulic effect that overturns boats and kills people.

I hope such a design component will be included in the plans for the next structure that will replace the old structure. We need a dam that is not a death trap.

Thanks for considering my comments.

Jack Kirkley
206 Legget Ave.
Dillon, MT 59725

Response #3

Thank you for your comments.

The Preferred Alternative for this project is much as you describe. It will consist of a rock weir dam located in the same location as the existing dam. The new dam will be chevron-shaped with the nose facing upstream. The downstream face of the dam will be stepped and filled in such as you describe and will also be fitted with a boat and fish passage channel with rest pools to avoid the creation of a "keeper" wave. The existing dam will be completely removed and replaced with this stepped rock weir and a new intake will be located on the north shore of the river.

Comment #4

From: Cunneen, Padraig
Sent: Wednesday, December 16, 2009 9:43 AM

Hi Guys,

This morning, I spoke with Doug Martin, NRDP Engineer on the Milltown project, about the river closure on the Clark Fork at Milltown. Doug told me that the area around the dam had been historically closed since there was no passage, so he thought the Big Hole scenario would be quite different. He went on to say that during the dam removal/river restoration project at Milltown the river has remained closed because of safety issues and will remain closed until 2012. The Fish, Wildlife and Parks Commission was the entity that imposed that closure. Doug suggested that you first visit with the area biologist on the Big Hole and tell him/her your plans and concerns. The biologist should be able to approach the FWP Commission with the safety concerns so they can determine if a closure is prudent during construction of the new diversion and removal of the old one.

Hope this helps,
Pat

From: Martin, Douglas (DOJ) [mailto:dougmartin@mt.gov]
Sent: Wednesday, December 16, 2009 10:01 AM
To: Cunneen, Padraig; Larson, Rick; Talley, Dick

I would like to clarify that the Milltown reservoir was not closed to floating historically, but since it was a reservoir and the dam prevented floaters from passing no one floated through the area prior to FWP Commission closing portions of the CFR and BFR. Good luck.

Doug

Response #4

Thank you for your comments.

BSB supports closure of the Big Hole River for recreational access during the construction period in order to ensure safety during construction activities, expedite the construction schedule, and reduce the instream construction period. BSB anticipates that this temporary closure would likely extend a maximum of 3 months. The final determination of whether recreational access may be restricted will be reached once final designs are complete, the impacts of construction to river access are better understood in terms of timing, and the actual construction period is better defined. This process will be a requirement of the application for a SPA 124 permit from FWP. Ultimately, the decision will be made by the FWP Commission as they are the only entity with jurisdiction to close parts of the river.

BSB will coordinate with FWP and local recreational users regarding potential closure of the river.

Comment #5	Response #5
From: al@bigholetrout.com [mailto:al@bigholetrout.com] **Sent:** Thursday, December 17, 2009 10:48 AM Dick, I talked to Andrew Hansen from Complete Fly Fisher and Frank Stanchfield from Troutfitters regarding closing that section of river for a few weeks during the critical construction time. Frank was all for it and Andrew had a few reservations regarding how long it would be closed. Mainly what if three weeks goes into three months. I told him you would probably have a fairly exact period of time. I also talked to Robin Cunningham who is the director of FOAM (Fishing Outfitters Association of Montana). I explained the situation to him and he was all for closing that stretch briefly for safety reasons and to speed up the project. I gave him your e-mail and he will be contacting you directly. This is a large organization with almost every fishing outfitter in the state belonging to it. Al	Thank you for your comments. Please see Response #4.

Comment #6

Public Hearing
December 15, 2009
6:00 P.M.

BSB Invites Your Comments:

Please include a river flow gaging station at the Divide pump house to be included in the USGS riverflow website

RECEIVED
DEC 18 2009
DOWL HKM

To receive further project information, please provide your name and address:

Name: Casey Johnston

Address: 2808 Elizabeth Warren
Butte, Mt 59701

Please leave your comments with Project Team staff at the meeting, or mail to:

Dick Talley, P.E., Project Manager
DOWL HKM
PO Box 3588
Butte, MT 59702
dick.talley@hkminc.com

Please indicate comments are for the Big Hole River Diversion Dam project and submit comments by **January 15, 2010.**

Response #6

Thank you for your comments.

Inclusion of a river flow gauging station at the new facility will be considered during final design efforts for this project.

Comment #7

From: Joseph M Cleary [mailto:josephmcleary@gmail.com]
Sent: Monday, December 21, 2009 8:59 AM

Rick,

Thanks for the links describing the diversion dam project. The Public and Agency Review Draft had a legible graphic of the proposed dam and all of the information that I needed. (I saw the selected diversion dam option graphic in this Sunday's Mt. Standard online, but was unable to blow it up to read clearly.)

From comments I reviewed from Al LeFor in the paper and feedback from my long time friend and local rancher, Jack Kambich, the proposed solution looks excellent, and, as an adjacent landowner, I will not be submitting public comments beyond this message indicating my approval.

However, because others in my family have property interests at 910 and 911 Pumphouse Road I am forwarding this to them, in the event they want to contact you with comments.

My compliments to the Project Manager, Dick Talley, for a solution that appears to satisfy all shareholder interests in maintaining the ecology, utility and safety of this beautiful piece of the Big Hole River.

Best Regards,

Mike Cleary
910 Pumphouse Rd.
Divide MT 59727

Home:
Joseph M. Cleary
6105 El Diente Circle
Golden, CO 80403

Office:
Joseph M. Cleary, PhD
Director, National Bioenergy Center
DOE National Renewable Energy Laboratory
1617 Cole Blvd.
Golden, CO 80401

Response #7

Thank you for your comments. BSB appreciates your support for this project.

As you note, BSB has attempted to balance competing interests and identify a Preferred Alternative that will improve system reliability, safety, and boater and fish passage at the site while minimizing impacts to important natural resources in the area.

Comment #8

From: Robin Cunningham [mailto:rcunningham@montana.net]
Sent: Monday, December 21, 2009 9:32 AM

Dick:

I was contacted by Al Lefor asking our association, the Fishing Outfitters Ass'n. of Montana (FOAM), to support temporary closure of the Big Hole duing August, 2010, while the existing power dam is restored.

I'm happy to solicit support for this closure from our Board of Directors. We meet next on January 8.

Is this meeting too late to sponsor the support you're after? When do you need word of support? When exactly would this particular reach of the Big Hole be closed - what month? What time of day? Can you offer me any details of what exactly is happening with the dam restoration? Al mentioned that prior plans had been rearranged to accomodate new revisions to the removal/restoration project.

Thanks in advance for any help you offer.

Robin Cunningham
Executive Director
FOAM

Response #8

Thank you for your comments. The discussion surrounding a potential temporary river closure will probably occur with FWP during the permitting process in the spring of 2010. BSB anticipates that a temporary river closure could extend from approximately the first week in July through the first week in September 2010 and would be considered in effect 24 hours per day. During this period, the river flow would be relatively low, making boating impractical; accordingly, the timing of the closure would minimize impacts on local recreational users to the extent possible.

The work activities will consist of constructing temporary coffer dams to route the river to one side of the river, removing the old dam in pieces and constructing a portion of the new dam. The temporary coffer dams would be relocated to the other side and the effort would be repeated. It will be critical to work in the river during low flow periods and effectively use coffer dams and appropriate construction techniques to minimize in-stream sediment movement and maintain water quality.

Given the need to access the river from both sides, utilize large equipment and temporary coffer dams, and maintain water quality, BSB supports temporary closure of the river in order to ensure the safety of construction workers and members of the public. River closure will also allow an expedited construction schedule.

Comment #9	Response #9
From: Steve [mailto:sluebeck@gmail.com] **Sent:** Wednesday, December 23, 2009 9:37 AM HI Dick, I saw the article in the paper last week, and heard about some of the issues that came out of the public hearing. The main unexpected issue that seems to have arose is the stream access law and the issue of a boat portage during construction. Have you and your team considered this issue and can you accommodate boat passage during construction? Steve Luebeck	Thank you for your comments. The project team is working with FWP to determine the best course of action to balance the benefit and enjoyment of recreational opportunities with site safety for both recreationalists and the construction contractor during the construction period. The final determination of whether recreational access may be restricted will be reached once final designs are complete, the impacts of construction to river access are better understood in terms of timing, and the actual construction period is better defined. This process will be a requirement of the application for a SPA 124 permit from FWP.
Comment #10	**Response #10**
From: Joanne Jense [mailto:jjense@bresnan.net] **Sent:** Wednesday, December 23, 2009 10:53 AM The Anaconda Sportsmen's Club is in full support of the Big Hole River Diversion Dam Replacement Project. We believe that with EA support and with the funds available to Butte Sivler Bow, it is the best plan selected for the river, fish, sportsmen and Butte Water project. Anaconda Sportsmen Club President, Lorry Thomas Leo Jense, Rep	Thank you for your comments. BSB appreciates the support of the Anaconda Sportsmen's Club for this project.

Comment #11	Response #11
From: Robin Cunningham [mailto:rcunningham@montana.net] **Sent:** Sunday, January 10, 2010 2:47 PM Dick: Thank you for the opportunity to comment on the Big Hole river closure proposal as part of the Big Hole river dam removal and repair. The Fishing Outfitters Association of Montana, FOAM, is generally opposed to closing rivers to fishing for anything but emergency reasons listed under current Montana Fish, Wildlife & Parks Emergency River Closure rules. However, we understand the need to provide safety to both construction personnel and river floaters during the low-water period proposed (July 5 - Sept. 1) while the necessary engineering project completes the project. Accordingly, we suggest HKM recommend MFWP only close the river to floatfishing during as short a period as is possible while sustaining walk-wade fishing in the construction stretch. We assume appropriate warning and caution signage will be used near and around the actual construction area. We hope our recommendation fits the needs of HKM Engineering, MFWP, and the general commercial and recreating public during this important dam removal and repair. Robin Cunningham Fishing Outfitters Association of Montana, FOAM	Thank you for your comments. Your suggestions regarding the potential temporary river closure will be further considered as the project team continues to coordinate with FWP and moves into the permitting and final design phases of this project.

Comment #12

BUTTE-SILVER BOW
HISTORIC PRESERVATION COMMISSION
PLANNING DEPARTMENT
155 W. Granite Street Butte, MT 59701
406-497-6258

January 7, 2010

Mr. Dave Palmer, Chairman
Council of Commissioners-Butte/Silver Bow
155 West Granite Street
Butte, Montana 59701

RE: Historic Preservation Commission Comments on the *PUBLIC AND AGENCY REVIEW DRAFT ENVIRONMENTAL ASSESSMENT for the Big Hole River Diversion Dam*

Dear Commissioner Palmer and Members of the Council of Commissioners:

The Butte-Silver Bow Historic Preservation Commission (BSB-HPC) had reviewed the referenced document. The review was undertaken in accordance with Butte-Silver Bow Municipal Code, Title 2, Chapter 2.64, Sections 2.64.070 H. and I. and Sections 2.64.120 A. and B. The comments of the HPC are attached and submitted to the Council of Commissioners as required under Section 2.64.070 I. These comments were approved by the HPC in the meeting of January 5, 2010.

Please contact me if you have any questions on the attached comments.

Sincerely,
Ernie Richards

Ernie Richards, Chairman
BSB Historic Preservation Commission

cc: w/attachment
Mr. Dick Talley, P.E. Project Manager
Dowl/HKM
130 North Main Street
Butte, Montana 59701

Dr. Mark Baumler, State Historic Preservation Officer
State Historic Preservation Office
Post Office Box 201201
Helena, MT 59620-1201

Response #12

Thank you for your comments. BSB appreciates HPC's involvement and participation in this project.

Removal of the Existing Dam-Intake Facilities
As you note, BSB intends to conduct all necessary and appropriate mitigation activities, including HAER documentation, as determined through consultation activities with SHPO.

New Intake Structure, Gates and Trash Boom
As you note, alterations to historic elements will be minimized to the extent practicable; impacted elements will be included in the HAER documentation as appropriate.

New Pump House
In the event that BSB moves forward with plans for a new pump house at some future date, BSB will work with HPC to ensure consistency with applicable standards.

Existing-Historic Pump House
As you note, any internal or external alterations to the existing Pump House will be included in the HAER documentation. BSB will also work with HPC on a plan for future preservation and maintenance of the historic Pump House.

Comment #12, continued

Butte-Silver Bow
Historic Preservation Commission
Comments
on
PUBLIC AND AGENCY REVIEW DRAFT ENVIRONMENTAL ASSESSMENT
for the
Big Hole River Diversion Dam
in
Silver Bow and Beaverhead Counties, Montana
January 6, 2010

Overview

The following provides the comments of the Butte-Silver Bow (BSB) Historic Preservation Commission (HPC) on the entitled document. These comments were prepared by the HPC under authority set out BSB Ordinance at 2.64.070 H. and I.[1]

As noted in the EA, Butte-Silver Bow will need to acquire the following permits to pursue the proposed project.

US Army Corps of Engineers
Clean Water Act Section 404
Clean Water Act Section 401 (jointly with the Montana Department of Environmental Quality or DEQ)

Montana DEQ
Short-term Water Quality Standard for Turbidity
Montana Pollutant Discharge Elimination System
General Permit for Discharges Associated with Construction Dewatering

Montana Department of Natural Resources and Conservation
Montana Land-Use License or Easement on Navigable Waters
Floodplain Development Permit from Silver Bow and Beaverhead County Floodplain Administrators

[1] *H. Review and comment on land use proposals and planning programs related to historic and prehistoric resources. The HPC will participate in the development of the Butte-Silver Bow comprehensive growth plans.* (and) *I. Consult with the local, state and federal agencies on all applications, environmental assessments, environmental impact statements and other similar documents pertaining to historic districts, landmark sites and landmark or neighboring properties within the city-county. Comments by the HPC will be sent by the HPO to the council.*

1

Response #12, continued

Archaeological Resources

The project team will comply with SHPO requirements regarding measures to minimize impacts to archaeological resources. As noted on pages 53 and 54 of the EA, appropriate mitigation measures will be followed to ensure the identification, evaluation, and disposition of any archaeological resources that might be discovered during construction. BSB will assess the site, in conjunction with a qualified archaeologist and in consultation with SHPO, regarding the nature and condition of the discovered item(s). All construction activity will be suspended until the site is handled properly, and in accordance with state and federal laws.

Comment #12, continued

Consultations with the Montana State Historic Preservation Officer are required as part of the process to acquire federal and state permits under the National Historic Preservation Act and the Montana Antiquities Act or other applicable laws and regulations. The SHPO has stated their office will consult with federal and state agencies that propose issuance of the above-listed permits.

The HPC also prepared these comments in view of a request to demolish the existing dam and intake works at the Big Hole Water Pumping Station (BHPS), a property listed on the *National Register of Historic Places* (NRHP). A possible permit process was reviewed by the HPC at the meeting of September 6, 2009 with representatives of BSB and the firm of Dowl/HKM, which has prepared engineering specifications and a draft Environmental Assessment (EA) for BSB. Authority to make such a review is set out in BSB Ordinance 2.64.120 A. and B.[2]

In the meeting of September 6, 2009, the HPC found that:[3]

1. the Big Hole Pumping Station is listed on the National Register of Historic Places (NRHP);
2. the existing dam appears to be failing, threatening failure of the Butte Water System, as well as operator and public safety, and
3. when Historic Properties are under consideration for demolition in Silver Bow County, it is the responsibility of the HPC to review the proposed action, and recommend either approval, approval with conditions, or denial of a demolition permit.

In the absence of a preferred alternative for redevelopment at that time; the HPC concluded that it could not make a responsible decision on the effects of the overall proposed redevelopment. However, the HPC made the following initial comments.

1. Only remove those elements of the existing dam and intake necessary to accomplish the goals of the project.
2. New dam and intakes design should have a minimal visual impact on the overall pump station, adopting a low height, natural colors and materials.
3. The existing dam and intake need to be documented professionally in accordance with standards established by the National Park Service, *Historic American Engineering Record.*

[2] *A. No local register property or historic property may be demolished without the approval of the HPC.* (and) *B. The HPC shall serve as the review body with the authority to approve, conditionally approve and deny demolition permits.*

[3] See Also, Appendix I of the Draft EA.

2

Response #12, continued

Comment #12, continued

4. Install an interpretive panel at the site to describe the historic design and workings of the dam and intakes.
5. Impacts to the existing pump station buildings and archaeological resources are to be avoided or mitigated.
6. Any new buildings or structures to be added to the site, need to be submitted to the HPC for design review.

Environmental Assessment

Dowl/HKM has completed a draft Environmental Assessment (EA) for the proposed project.[4] The historic, architectural and archaeological considerations are detailed in Appendix G thereof.[5]

The draft EA proposes adoption of Alternative 3 as the preferred alternative. In Phase I thereof the existing dam and other, associated operating elements would be removed and replaced by construction of a new rock weir and associated intake facilities. The EA describes the new diversion structure as follows.[6]

> *The profile of the new weir structure would include small downstream steps to gradually lose elevation down the rock face. The shape and elevation of the weir would be optimized to provide the desired upstream water surface and safe boating and fish passage. The rock weir would be visible during low flow conditions, while intake structures would remain relatively hidden from view at all times. The rock weir would be constructed of quarried rock or native round rock as opposed to concrete in order to minimize visual impacts. The rock would be grouted to form a natural channel. The grout would be placed such that at least six inches of the rock would be exposed to create an ideal environment for aquatic organisms.* (…)
>
> *The new dam would be constructed from grouted rock as well and would bear on a grouted rock keyway that would anchor the structure to the river bed. The dam would function by blocking the river flow and damming up the water level until it overtopped the boat and fish passage channel weir elevation….*

[4] Dowl/HKM, December, 2009: *PUBLIC AND AGENCY REVIEW DRAFT ENVIRONMENTAL ASSESSMENT for the Big Hole River Diversion Dam in Silver Bow and Beaverhead Counties, Montana.*

[5] Perrin, Natalie Perrin, Architectural Historian and Miller, Heather Lee, Ph.D., Associate Historian, 2009, Page ____: *ENVIRONMENTAL ASSESSMENT for the Big Hole River Diversion Dam In Silver Bow and Beaverhead Counties, Montana APPENDIX G. HISTORIC AND CULTURAL RESOURCES REPORT.*

[6] Dowl/HKM, December, 2009, pages 13-14: *PUBLIC AND AGENCY REVIEW DRAFT ENVIRONMENTAL ASSESSMENT for the Big Hole River Diversion Dam in Silver Bow and Beaverhead Counties, Montana.*

3

Response #12, continued

Comment #12, continued

The EA also describes a new intake structure, gates and a trash boom.[7]

> *The primary intake would be located along the existing north wall and would include screens for sediment removal. The new intake structure and functionality would be essentially identical as described under Alternative 2, but would be located within the footprint of the existing diversion dam. Similarly, the intake control valve would involve either a butterfly gate valve or an Obermeyer gate valve with the same benefits as noted in the prior discussion. The secondary intake would be located slightly upstream and would include coarser screens or bar screens to provide short-term water delivery pending repair measures in the event of primary intake failure. As described for Alternative 2, a floating boom would be installed immediately upstream of the intake chute to redirect floating debris from the intake.*

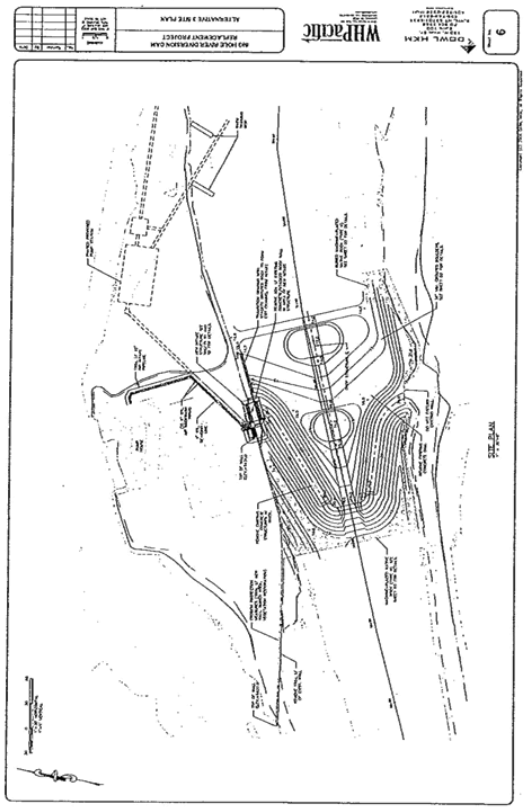
The plan for Alternative 3 is shown in the figure which follows.

[7] Op. cit.

4

Response #12, continued

Comment #12, continued



This proposed design would also be a radical departure from the existing, historic facilities. However, such a design is needed to meet project objectives.

Phase II of Alternative 3, which is dependent upon future funding, would include construction of a new pump house located northeast of the historic pump house. The EA does not appear to include a detailed design for any such new pump house. Also in

5

Response #12, continued

Comment #12, continued

Phase II, all water delivery components would be removed from the historic pump station. [8]

HPC Comments

The HPC finds that the Big Hole Pump Station Site, as currently listed in the National Register of Historic Places, is also eligible for listing on the BSB Local Register. The HPC will prepare appropriate documentation for such a listing at the earliest opportunity.

Removal of the Existing Dam-Intake Facilities

Removal of the existing dam and associated facilities would constitute an adverse effect to the historic property. Mitigation of that effect must be completed in advance of the removal of these elements. The HPC concurs with the proposal in the draft EA that mitigation take the form of *Historic American Engineering Record*[9] (HAER), Level II documentation. That documentation would consist of the following: [10]

1. drawings: select existing drawings, where available, should be photographed with large-format negatives or photographically reproduced on mylar;

2. photographs: photographs with large-format negatives of exterior and interior views, or historic views, where available, and

3. written data: history and description.

This work must be conducted by persons qualified and experienced at such recording, and be done consistent with the *Secretary of the Interior's Standards for Architectural and Engineering Documentation*. All such documentation must be completed and accepted by the Montana State Historic Preservation Officer (SHPO) and the National Park Service (NPS), prior to any removal or alternations of existing facilities.

New Intake Structure, Gates and Trash Boom

This proposed design would also be a radical departure from the existing, historic facilities. However, such a design is needed to meet project objectives. Alterations to any historical architectural or engineering elements of the historic property in the area

[8] The Draft EA notes (Page 15): *This EA will consider both Phase I and Phase II of Alternative 3, although the timing of Phase II is dependent on funding.*

[9] http://memory.loc.gov/ammem/collections/habs_haer/

[10] http://www.nps.gov/history/local-law/arch_stnds_6.htm

6

Response #12, continued

Comment #12, continued

of the new intake, gates and boom must be minimized and any such elements to be altered or removed must be included in the HAER documentation described above.

Removal of 150' of An Existing Training Wall and New Wall

The site plan for Alternative 3 identifies a proposal to remove 150' of an existing retaining wall upstream of the diversion and to replace it with a new wall. HAER documentation of the existing wall, done consistent with other such documentation detailed above, must be completed in advance of the removal of this feature. Also, a detailed design for the new wall must be submitted to the HPC for review prior to construction. Any new wall should be constructed of materials compatible with the existing wall. Any new wall must be compatible with the *Secretary of the Interior's Standards for the Treatment of Historic Properties.*[11]

New Pump House

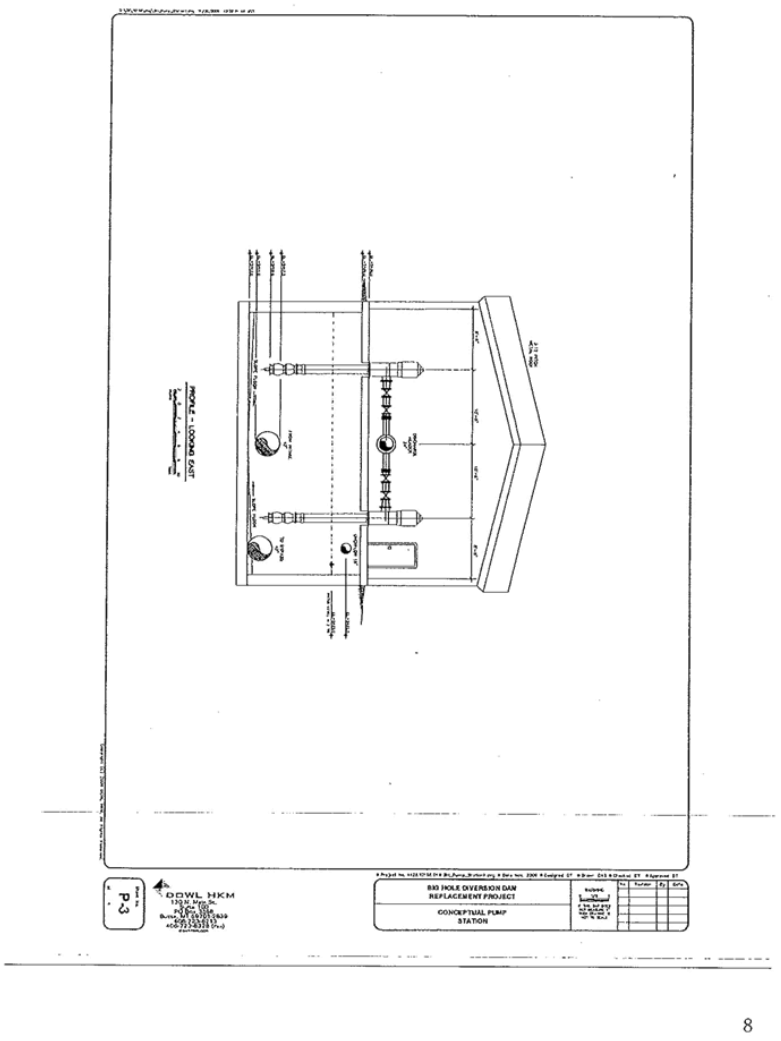
Phase II of Alternative 3 would include construction of a new Pump House, rerouting all pumping functions from the historic Pump House. Implementation of Phase II would be dependent on funding being made available. Construction of a new pump house could impact the historic property by introduction of a visual element out-of-character with the historic facilities, as well as relocation of existing water conveyance functions.[12] The draft EA (Appendix C) contains only conceptual designs of such a new Pump House. These are insufficient for design review by the HPC. However, one of these drawings (P-3) identifies a roof design to include a metal roof (see following figure). This would not be consistent with applicable standards. The HPC comments that BSB must submit detailed designed drawings of any new Pump House proposed in the future. BSB must design any such new Pump House to be consistent with the form and materials of the existing, historic Pump House and develop designs for a new facility that are compatible with the *Secretary of the Interior's Standards for the Treatment of Historic Properties.*

[11] http://www.nps.gov/history/local-law/arch_stnds_8_2.htm See standards for reconstruction.
[12] 36 CFR 800. 5 (a) (2) (v)

7

Response #12, continued

Comment #12, continued



Response #12, continued

Comment #12, continued

Existing-Historic Pump House

The EA states that:

> *In addition, new piping and other new construction would impact the Big Hole Pump Station, a historic property listed on the NRHP. Phase II of Alternative 3 would incorporate construction of a new pump station, relocating existing water conveyance functions from the historic Big Hole pump station. This aspect may allow for easier public access to, and preservation of, the historic resource; however, it would alter the primary use of the facility from a pump station, which may be considered an adverse effect and would likely require mitigation.*

The draft EA is correct that new piping and other construction would impact the historic pump station if new piping is not designed as a replacement-in-kind or if alterations to any other architectural or engineering elements of the historic Pump House are required in any phase of Alternative III. Any proposed replacements-in kind designs must be reviewed by the HPC.

The draft EA is also correct in stating that construction of a new Pump House, and subsequent abandonment of the historic Pump House as a pumping facility would alter the function of the historic Pump House to some unspecified future use(s). The potential that such construction "may allow for easier public access to and preservation of the historic resource" cannot be assessed adequately at present. The EA contains no detailed plan for future disposition/preservation of the historic pump house. The only references to any such possible plan in the EA are:

> • *Interpretation and education (e.g., install signs or salvaged components at the BSB Public Works Department office or a city park; print a brochure or small pamphlet telling the history of the project; develop a brief documentary film and post it on the BSB website).*
>
> • *Mitigation through "positive effects" on an historic resource, specifically restoration of the Big Hole Pump Station building. Appropriate mitigation of the Big Hole Pump Station could be limited to exterior character-defining features. This may include re-pointing and repair to structural brick and masonry on the building and smoke stack, and restoration of window and door openings, where appropriate.*

The HPC notes that it is not "mitigation of the Big Hole Pump Station", but rather mitigation of the impacts to that property which need to be addressed in the Final EA. In order to address the potential adverse effects posed to historic architectural or engineering elements of this historic property, both on the exterior and interior, the HPC comments that the following plan be adopted in the Final EA.

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Response #12, continued

Comment #12, continued

If any internal or external alterations or changes must be made to the historic Pump House in order to implement Alternative 3, in either Phase I or II; then any architectural or engineering elements altered or removed in any manner, must be included in the HAER documentation detailed above.

BSB needs to work with the HPC on developing and implementing a plan for the future preservation of the historic Pump House which maintains the building such that demolition by neglect does not occur. A detailed plan needs to be developed in consultation with the HPC and the Montana SHPO. The Final EA needs to commit to such a process.

Archaeological Resources

The draft EA is deficient as regards inventory, assessment and plans regarding archaeological resources. Section 4.1 of Appendix G states the following (emphasis added).

> *The scope of this assessment* ***did not include archaeological survey****. It should be noted that, with the exception of Alternative 1 (the "do - nothing" option), all proposed alternatives will require ground - disturbing activities. As with any project that will include ground - disturbing activities, there is a possibility of encountering archaeological resources.*
>
> *Architectural historians, conducting pedestrian survey of the site during the evaluation of resources for this report, encountered a trash scatter of bricks, worked stone, and concrete upstream of the pump station along the north bank. Ground disturbing activities may encounter archaeological evidence from the initial construction of the Big Hole Pump Station (1899) and subsequent addition (1906),construction of the extant dam (1929), and possible foundation remains from outbuildings at the site that have since been removed. Because the site is located at a river, the chance of encountering prehistoric archaeological resources is probable.*
>
> *In the event that archaeological resources are discovered during construction, appropriate mitigation measures should be followed to ensure their identification, evaluation, and disposition. BSB should assess the site, in conjunction with a qualified archaeologist and in consultation with the Montana SHPO, regarding the nature and condition of the discovered item(s). All construction activity should be suspended until the site is handled properly, and in accordance with state and federal laws.*

The HPC comments that inventory studies lacking an archaeological component are inadequate, when all alternatives other than the "No Action" alternative will involve ground-disturbing activities. Review of the EA, Appendix G, further substantiates the need for archaeological inventories, assessments and actions proposed to manage

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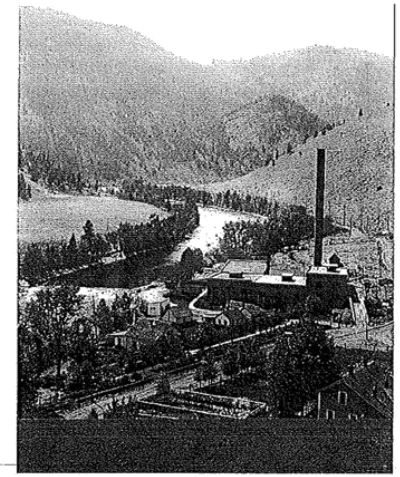
Response #12, continued

Comment #12, continued

archaeological resources at the historic property. For example, Appendix G of the EA states:[13]

> *Due to the isolated location of the pump station, housing for engineers and workmen was constructed on site (Figure 3). Seven buildings, providing housing and storage, were included in the 1980 NRHP nomination of the Big Hole Pump Station. The Chief Engineer's House, constructed in 1900, and associated garage (c. 1920) were located east of the pump station. The Boarding House, built in 1912, housed up to fifteen workers and was located west of the pump station. Employee House 1, built in 1916, and Employee Houses 2 and 3, built in 1937, were also located west of the pump station. A hose house is the only surviving ancillary building from the turn of the twentieth century, and today still houses the hand - pulled fire cart.*

Figure 3 of Appendix G of the draft EA (c. 1920) shows a variety of buildings and structures on the historic property.



Most of these buildings or structures are no longer extant. However, the EA does not account for the possibility that archaeological remains of these buildings and structures

[13] Perrin, Natalie Perrin, Architectural Historian and Miller, Heather Lee, Ph.D., Associate Historian, 2009 : *ENVIRONMENTAL ASSESSMENT for the Big Hole River Diversion Dam In Silver Bow and Beaverhead Counties, Montana APPENDIX G. HISTORIC AND CULTURAL RESOURCES REPORT.*

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Response #12, continued

Comment #12, continued

may remain on the site. The draft EA only proposes that a provision be made for addressing potential impacts to archaeological resources as a discovery during construction process. Such a proposal is deemed inadequate, when Appendix G already notes the identification of: [14]

> *a trash scatter of bricks, worked stone, and concrete upstream of the pump station along the north bank. Ground disturbing activities may encounter archaeological evidence from the initial construction of the Big Hole Pump Station (1899) and subsequent addition (1906),construction of the extant dam (1929), and possible foundation remains from outbuildings at the site that have since been removed.*

Therefore, the HPC comments that the following plan either:

1. be implemented before completion of a Final EA, or
2. the Final EA include a commitment to undertake the following plan, in advance of any construction related activities[15] anywhere on the pump station site.

A complete and professional archaeological inventory must be undertaken over all lands associated with any proposed land-disturbing or other construction activities to implement both phases of Alternative 3. The inventory studies must address the identification of both historic and/or prehistoric archaeological resources. That inventory must be conducted by a person or persons professionally qualified in archaeological studies and qualified under the *Secretary of the Interior's Professional Qualifications Standards* for archaeology (48 FR 44739). Special emphasis for selection of persons to conduct these studies must be to include specialists in Historical Archaeology. These studies must account for the locations of any previously-existing buildings or structures which have since been removed.

After completion of all archaeological studies, plans for all construction-related activities would be reviewed to determine if any would potentially impact identified archaeological resources. Modifications of proposed plans would then be made in order to avoid any impacts to archaeological resources where that is feasible. If

[14] Perrin, Natalie Perrin, Architectural Historian and Miller, Heather Lee, Ph.D., Associate Historian, 2009, Page 15-16: *ENVIRONMENTAL ASSESSMENT for the Big Hole River Diversion Dam In Silver Bow and Beaverhead Counties, Montana-APPENDIX G- HISTORIC AND CULTURAL RESOURCES REPORT.*

[15] Construction-related activities would include the stockpiling of rock for use in construction of the proposed weir or other materials. Dowl/HKM stated at the public meeting of December 15, 2009 that they propose to stockpile rock on the site, acquired from a local quarry, prior to issuance of any permits. Such actions, should they impact any archaeological resources would be an indirect effect of the proposed action under permit applications and therefore also subject to the provisions of both NEPA and the National Historic Preservation Act and it's implementing regulations. Such effects would not occur but for the proposed work to be done under federal or state permits or other authorizations.

12

Response #12, continued

Comment #12, continued

potential impacts cannot be avoided, then evaluations of resources for listing in the NRHP, as contributing elements to the historic property, and/or as independently eligible for listing in the NRHP under Criterion D. If resources are evaluated as contributing or eligible[16], a plan for mitigating any unavoidable impacts must be adopted and implemented prior to any construction or construction-related activities.

Finally, a professional archaeological monitor must be assigned to all phases of construction involving any land-disturbing actions. The monitor would be charged with helping to ensure that plans for avoidance of effects were implemented during construction. The monitor would also be charged with authority to invoke a construction stoppage within 100' of the discovery of any previously unrecorded archaeological remains during construction and/or be consulted when any changes are proposed to the construction plan. In the event of such a discovery, all work would cease in the area and assessment of the needs for additional consideration, avoidance or mitigation of effects would be undertaken and implemented.

[16] These evaluations would adopt existing guidance from National Register bulletins and be done in direct consultation with the Montana SHPO.

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Response #12, continued

Comment #13

07-Jan-10
Russell Brewer, P.E.
PO Box 201001
Helena, MT 59620-1001
rbrewer@mt.gov

What consideration has been given to bed mobility and sediment transport, during construction activities, post construction?

Has there been any determination how bed mobility and sediment transport, may impact transportation infrastructure and facilities upstream or downstream of the project site?

Russell Brewer, P.E.
MDT Bridge Scour Engineer

Response #13

The existing dam was originally built in approximately 1912. The dam was constructed with a timber apron downstream of the dam to prevent erosion at the downstream toe. The dam and downstream apron remained intact until approximately 1998 when the pump station operators struggled to maintain an upstream water level to supply a sufficient quantity of water to the City of Butte. Without an intact timber apron, a localized scour hole developed at the downstream toe of the dam. The scoured material deposited approximately 30 feet downstream of the dam. In approximately 1998 and 2006, the operators placed large rock in the scour hole which apparently allowed the operators to maintain an adequate upstream water level. This temporary, localized sediment transport had no impact on the bridge approximately 1 mile downstream. The river appears to again be stable after the recent placement of rock. Modeled velocities and shear stresses for the existing structure are consistent with size of bed materials observed in the existing channel. Studies of the Big Hole River indicate that the dam is in a reach having "a 'very low' relative average migration rate" (DTM and Applied Geomorphology, 2005). This is supported by observations in the vicinity of the dam which show no sign of lateral migration. Further, no long-term indications of aggradation or degradation are present in the vicinity of the dam. The proposed design includes modeling to determine velocities and shear stresses. The intent is to limit velocities and shear stresses, as closely as possible, to those that currently exist. The proposed modifications to the Big Hole Diversion Dam should have no adverse impact on upstream or downstream highway structures.

Comment #14

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
FEDERAL BUILDING, 10 West 15th Street, Suite 3200
HELENA, MONTANA 59626

Ref: 8MO

January 12, 2010

Mr. Dick Talley,
DOWL HKM
130 North Main
Butte, MT 59701

Re: EPA Comments on Draft Environmental Assessment for the Big Hole River Diversion Dam Project in Silver Bow and Beaverhead Counties, Montana

Dear Mr. Talley:

The Environmental Protection Agency (EPA) Region VIII Montana Office has reviewed the Draft Environmental Assessment (EA) for the for the Big Hole River Diversion Dam Project in accordance with EPA responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act.

The EPA recognizes the need to replace the existing Big Hole River diversion dam and intake structure in order to provide a reliable source of potable water for the Butte service area, and to improve safety at the diversion dam site for maintenance personnel and public recreational use. We support the project goals stated in the EA (i.e., provide a reliable source of potable water for the Butte service area; reduce maintenance requirements; reduce icing problems; improve fish passage; improve boat passage safety; minimize impacts to environmental resources; improve safety for maintenance personnel; minimize project costs, page 5).

Our primary comments and concerns regarding the proposed project and EA involve assuring that the preferred alternative for dam replacement complies with the requirements of the Clean Water Act (CWA) Section 404(b)(1) Guidelines (40 CFR Part 230). As you know discharges of dredged or fill material into wetlands and other waters of the United States are regulated by Section 404 of the Clean Water Act, 33 U.S.C. 1344, which is administered jointly by the U.S. Army Corps of Engineers and EPA. The 404(b)(1) Guidelines provide the substantive environmental criteria by which 404 permits are evaluated. See Corps of Engineers Montana Regulatory Office website for further information, https://www.nwo.usace.army.mil/html/od-rmt/mthome.htm.

The 404(b)(1) Guidelines do not allow for issuance of a 404 permit when there are other practicable alternatives to the proposed discharge that would have less adverse effects on the aquatic ecosystem (40 C.F.R. § 230.10 (a)). It will be important, therefore, to assure that the final preferred alternative for dam replacement is considered by the Corps of Engineers and EPA

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Response #14

Thank you for your comments. BSB appreciates EPA's involvement and participation in this project.

Aquatic Effects and Least Environmentally Damaging Practicable Alternative (LEDPA)

1. The four Build Alternatives were further refined following the agency coordination meeting held on November 3, 2009; the refined project alternatives are presented in Chapter 2 of the EA.

   Alternatives 3, 4, and 5 all entail construction of a rock weir that would be nearly identical in size and shape under each of these alternatives. The main difference is the specific location of the rock weir and the configuration of the intake. The rock weir structure proposed under both Alternatives 3 and 4 would be identical in terms of its footprint, location, and impact on the backwater pool. The rock weir proposed under Alternative 5 would result in the greatest impact on the upstream pool due to its proposed location. As noted on page 48 of the EA, Alternative 5 would position the nose of the new rock weir dam approximately 630 feet upstream of the existing dam and the resultant dam footprint would extend downstream impinging on nearly two-thirds of the existing upstream pool. In comparison, the nose of the chevron dam proposed for Alternatives 3 and 4, would be located approximately 145 feet upstream of the existing dam, as noted on page 48 of the EA. This placement minimally encroaches upon the upstream pool.

Comment #14, continued

to be the least environmentally damaging practicable alternative (LEDPA) under the 404 permitting rules. Our comments and concerns regarding the draft EA are described below.

Aquatic Effects and Least Environmentally Damaging Practicable Alternative (LEDPA)

1) It appears to us that Alternatives 3, 4 and 5 all would improve fish passage and provide recreational boater passage, and thus, provide improved conditions in the river in comparison to the current dam. The EA appears to select Alternative 3, New Rock Weir Dam and Intake with New Pump House, as the preferred alternative, since "Alternative 3 is best able to meet the project purpose and need and the project goals" (pages 66-69). The EA states that Phase I of Alternative 3 would ensure improved system reliability; reduced maintenance and icing problems; improved safety; improved fish and boat passage; would require the least amount of new fill material in the Big Hole River; would be the least impactive as its footprint is located within the historical footprint of the existing dam; would be least costly; and would not require a change in the point of diversion (Table 5.1, page 67). Wetland impacts appear to be the same for Alternatives 3 and 4, both of which have slightly less impacts than Alternative 5.

   An interagency meeting regarding the proposed Big Hole River Dam Replacement project had been held at the DOWL HKM Offices in Butte on November 3, 2009, and from discussions at this meeting it appeared to us at that time that Alternative 4, New Rock Weir Dam with Floating Intake, may have the least adverse impacts to aquatic resources. Under Alternative 4, new primary and secondary intake facilities would be located upstream of the existing dam, with the primary intake consisting of buried piping extending outward from the north river. EPA staff came away from the November 3rd meeting with the perspective that Alternative 4 may be least environmentally damaging practicable alternative under 404 permitting rules. However, the EA now indicates that Alternative 3 may be the least environmentally damaging practicable alternative.

   It was our understanding that the resource protection and regulatory agencies considered Alternative 4 to have lesser aquatic impacts, since Alternative 4 would maintain an existing pool located upstream of the current diversion dam that provided good fish habitat. The EA indicates that the backwater pool upstream of the current dam provides important fish habitat, and that the Big Hole River is an outstanding fishery resource with arctic grayling and the westslope cutthroat trout (State Species of Special Concern, page 33). The DFWP representative at the November 3rd meeting stated that Alternative 4 would reduce impacts to the backwater pool, and also noted that in addition to preserving the existing pool, Alternative 4 would create new pools downstream of the dam. These items are noted in the summary of the Nov. 3 meeting included in Appendix J of the EA.

   It was our understanding from the discussion at the November 3rd meeting that Alternative 3 may disturb this backwater pool, but that understanding does not seem to be supported by the EA. The EA states that under Alternatives 3 and 4, the new dam structure would be set approximately 145 feet upstream of the existing dam. The

Response #14, continued

The intake location for Alternatives 3, 4, and 5 would also differ. Under Alternatives 3 and 5, the new primary intake would be located on the north shore completely outside the river channel, whereas the floating intake proposed for Alternative 4 would be situated directly in the backwater pool. This floating intake would be covered by only 2 to 3 feet of water during river flows of less than 5,000 cfs. Due to this minimal cover, the floating intake would likely require periodic maintenance and repair due to anticipated damage from ice, debris, and recreational users' anchors and fishing lines, thus periodically and continually disturbing the important habitat found in the backwater pool.

Given the direct impact of Alternative 5 on the existing upstream pool and the anticipated repeated maintenance activities associated with the floating intake proposed in Alternative 4, it was determined that Alternatives 4 and 5 would result in detrimental aquatic effects, while Alternative 3 would result in the least impact to aquatic resources.

It is important to note the operational requirements of the dam and intake for Alternative 3. The proposed dam and control valve on the intake structure will be designed to maintain an upstream water surface elevation of at least 5,419 feet, as this is the required elevation to generate sufficient head to avoid cavitation in the pumps. To achieve an upstream water surface elevation of at least 5,419 feet, the control valve in the intake chute will need to closed or raised such that it "checks" up the river sufficiently to maintain this elevation. The weir on the boat and fish passage channel is proposed at elevation 5,417.5 feet, which ensures that river flow is maintained through its entirety when the upstream water surface elevation is at least 5,419 feet. The importance of this discussion is that operationally, BSB will need to maintain the upstream water surface elevation of at least 5,419 feet to operate the pump station and, by doing so, will ensure flow through the boat and fish passage channel. It is not possible to divert the entire river flow through the intake chute and leave the boat and fish passage channel dry as, by doing so, the upstream water surface elevation will be lowered to below 5,417.5 feet, and hence the pump station will be unable to operate.

Comment #14, continued

crest of the new dam would be at nearly the same elevation as the existing dam, and would maintain a backwater pool upstream of the new dam crest. The length of the existing backwater pool would be shortened by 145 feet (approximately 20 percent of the existing pool length), which is equivalent to the distance between the existing dam and the proposed location of the new dam (page 48).

The EA, thus, appears to suggest that both Alternatives 3 and 4 would have equivalent minor impacts on this backwater pool, and does not appear to say anything about creating new pools for fish habitat with either alternative. As a result of this apparent discrepancy between the EA and discussions at the November 3, 2009 meeting a follow-up conference call was held with DOWL HKM staff on January 7, 2010 and staff from federal and state resource and regulatory agencies, including EPA. These discussions indicated that maintenance needs associated with the proposed floating intake for Alternative 4 are likely to result in repeated intrusions with adverse impacts on the river during winter icing conditions. It was also stated that these maintenance impacts would be less likely to occur with Alternative 3.

These potential adverse impacts associated with Alternative 4 appear to provide a reasonable explanation that would cause us to agree that Alternative 3 may be less damaging to aquatic resources than Alternative 4.

We recommend that the final EA and FNSI discuss such factors more fully and explain in greater detail the anticipated impacts to fisheries habitat features in the river in the vicinity of the dam with the different alternatives, including impacts during maintenance of the dam and intake structure. A more detailed comparison of the relative impacts to fisheries and other aquatic resources as well as other advantages and disadvantages between alternatives should be more fully described to better assess and understand environmental effects, and validate that Alternative 3 is the least environmentally damaging practicable alternative.

2) As noted above, we very much support the need to provide recreational boater and fish passage at the diversion dam, and are pleased that the EA indicates that Alternatives 3, 4, and 5 would improve fish passage by stepping the drop in water elevation downstream of the new dam, and reducing water velocities (page 47). The EA states that fish passage would be improved at all times of the year as a result of improved hydraulics (page 48). It is not clear, however, if there would be any notable or measureable differences in fish passage between Alternatives 3, 4 and 5.

It would be helpful if the final EA provided clearer comparative analysis of fish passage or aquatic organism passage capability among the various action alternatives. Any differences among the various alternatives in their ability to provide for aquatic organism passage, particularly passage of juvenile fish should be more clearly described.

3) We are pleased that rock features associated with drop pools would increase fish habitat complexity, and that replacement of the settling basin with new screened intakes would likely prevent fish entrainment and reduce fish losses to improve

Response #14, continued

2. With regard to aquatic organism passage, Alternative 2 differs from all other Action Alternatives because it would involve construction of a traditional dam nearly identical to the existing structure. This dam would continue to serve as a partial barrier to fish passage, and is considered to be the most impactful from a fish passage standpoint. Alternatives 3, 4, and 5 would all entail construction of a rock weir that would be identical in size and shape under each of these alternatives. The rock weir would be stepped to gradually lose elevation and facilitate fish passage. Under Alternatives 3, 4, and 5, the rock material used for the weir would be grouted together to ensure structural stability, although the top six inches would remain ungrouted to maintain interstitial spaces for aquatic organisms to seek cover as well as resulting in a breakup and reduction of the velocity vectors. As noted in FWP's letter (see Comment #19), it is not known exactly how grouting will affect passage for juvenile fish and other small aquatic organisms. There would be no difference in grouting impacts under Alternatives 3, 4, and 5, however, since the rock weir structure would be constructed identically under all three scenarios.

   Alternatives 3, 4 and 5 all consist of a stepped rock weir structure with a gradual (less than four percent) slope from the weir crest to the downstream river bed. This shallow incline will be further enhanced by two rest pools at approximate third points along the profile. The entire downstream apron will be constructed using native rocks that are grouted together with a hold back of approximately six inches creating interstitial spaces and variability in the velocity profiles. These interstitial spaces coupled with the native rock structure and reduced and intermixed velocity profiles all will aid and be complimentary to aquatic organism and fish passage. Alternatives 3, 4, and 5 are considered identical with respect to their impacts on aquatic organism and fish passage. The least environmentally impactful alternative was determined based upon impacts to the existing upstream pool. Under Alternative 5, it was determined that the footprint of the dam would encroach upon the largest area of the pool, while Alternative 4 would result in impacts associated with routine and periodic ingress upon the existing upstream pool for maintenance and operational activities. Accordingly, it was determined that Alternative 3 would result in the least overall impact to fisheries.

Comment #14, continued

conditions for fisheries in this portion of the Big Hole River (page 49). Would fish habitat complexity be improved any greater with Alternative 3 than with Alternatives 4 and 5?

Change in Point of Diversion

4) The EA also states that Alternative 3 would not require a permit for a change in point of diversion (page 69), eliminating the need for a potentially lengthy permitting process and the risk of re-adjudication of the existing water right of Butte Silver Bow City and County (BSB). Phase I of Alternative 3 would remove the existing diversion dam and associated features, and replace it with a single concave rock weir located in approximately the same location as the existing diversion dam, thereby eliminating the need for a DNRC permit for a change in point of diversion (page 13). Under Alternative 4, new primary and secondary intake facilities would be located upstream of the existing dam. Because the intake would be moved upstream, a DNRC permit for a new point of diversion would be required for Alternative 4 (pages 15,16)

It appears that the possible need for a permit for a change in point of water diversion, eliminating the need for a lengthy permitting process and risk of re-adjudication of BSB's existing water right for Alternative 4, may be an important factor resulting in the identification of Alternative 3 as the preferred alternative in the EA. We do not fully understand the steps involved with requesting a new point of diversion only a few hundred feet upstream of the existing diversion. It appears that such a change in point of diversion may result in project delays and or other problems that the City and County of Butte Silver Bow would like to avoid, and that perhaps this is an important factor in selection of Alternative 3 over Alternative 4.

We recommend that the final EA and FNSI describe in greater detail the water appropriation process and/or change in diversion permitting process, and the problems this process presents in regard to proceeding with an alternative that might require moving the point of water diversion by a couple of hundred feet upstream.

Please note that we are not advocating selection of a different preferred alternative, but rather are trying to better understand the change in point of diversion permitting process, since it appears that this process may be an important factor in alternatives selection. We are particularly interested in understanding how this permitting process is evaluated and compared with other factors during the evaluation of alternatives.

New Pump House

5) It is stated that the second phase of Alternative 3 would provide an additional operational benefit over other alternatives through construction of a new pump house which would enable the placement of new or existing pumps at proper elevations to eliminate pump cavitation. Alternative 3 appears to be the only alternative involving proposed construction of a new pump house in a Phase II of the project. It is not clear to us why the Phase II aspect of construction of a new pump house is only mentioned

Response #14, continued

3. Under Alternatives 3, 4, and 5, the rock weir dam would be constructed of native or quarried rock grouted together to ensure structural stability. The grout would be placed such that at least six inches of the rock would be exposed to create an ideal environment for aquatic organisms. The use of large angular stone would also create aquatic features which may attract fish due to increased habitat complexity. Because the rock weir structures would be identical under Alternatives 3, 4, and 5, there would be no differences in habitat complexity associated with the structure itself. As noted above, the location of the rock weir dam under Alternative 5 would have a greater direct impact on the important upstream pool as compared to Alternatives 3 and 4. Alternative 4, on the other hand, would require regular instream maintenance within this important upstream habitat. For these reasons, Alternative 3 was identified as having the least impact on fisheries habitat.

Change in Point of Diversion

4. The need for a permit for a change in point of diversion was one of the factors considered in the evaluation of the alternatives. As determined through consultation activities with the DNRC Water Resources Division, a formal change in point of diversion would be required for any intake structure constructed outside the historic footprint of the existing diversion system. The project team determined that it would be beneficial to avoid the point of diversion permitting process because it could not be accomplished within a timely manner; as noted throughout the EA, time is of the essence because the existing diversion dam may fail at any point. Further, the permitting process could potentially involve a re-adjudication of BSB's existing water right, which may threaten BSB's existing claim and its ability to accommodate future growth.

Comment #14, continued

in association with Alternative 3. Could this Phase II construction of a new pump house be considered in association with other action alternatives? This should be clarified.

It is stated that Alternative 4 provides for increased upstream water surface levels and increased suction head on existing pumps (Table 5.1, page 67). Does this mean that a Phase II new pump house may be needed less for Alternative 4? Would this be a potential advantage of Alternative 4 over Alternative 3? We also note that Table 5.1 shows Alternative 3 (Phase I) would cost $5.1 million and Alternative 4 would cost $5.3 million, however, when the cost of the Phase II new pump house ($4.4 million) is added it drives the cost of Alternative 3 up to $9.5 million, making it the most costly of the alternatives.

Bank Stabilization and Construction

6) The EA states that bioengineered bank treatments will not be used in the immediate vicinity of the of the proposed dam and intake structures, since it is critically important to permanently secure dam and intake structures in place to meet maintenance and operational objectives (page 46). Although it is also stated that bioengineered bank stabilization will be considered at other locations up and downstream of the proposed dam and intake structures.

We support and encourage use of bioengineered bank stabilization measures as much as possible to promote more natural and ecologically compatible bank stabilization. We particularly believe revetments using dense layers of willow cuttings may offer great potential for stabilizing river banks in a more natural and ecologically compatible manner. We suggest that you contact Jeff Ryan of MDEQ at 406-444-4626 regarding use of such bank stabilization.

We also agree that disturbance of existing vegetation and mature cottonwoods on river banks should be avoided as much as possible during construction (page 46), and recommend that disturbed areas be revegetated with the same or similar species to minimize habitat impacts and to stabilize and restore disturbed areas.

7) Finally, as you know construction activities have potential to result in erosion and sediment production/transport and adverse impacts to water quality and fisheries. We are pleased that control measures such as dewatering and/or diverting water away from active construction activity would be used to minimize increases in turbidity; and that instream construction timing restrictions would be established in coordination with regulatory agencies through the Clean Water Act (CWA) Section 404 and Stream Protection Act (SPA) 124 regulatory processes (page 49).

We support addressing construction impacts during permitting processes such as the Section 318 short term turbidity exceedance authorization, 124 permits, 404 permits, MPDES Stormwater permits, etc.). Although we also note that these permitting processes should be integrated as much as possible with the NEPA process so that they occur concurrently rather than consecutively (40 CFR 1500.2(c)).

Response #14, continued

Change in Point of Diversion, continued

It should be noted, however, that the point of diversion issue was not the driving force or the most important consideration in the alternatives analysis process. In order to satisfy the Purpose and Need, the Preferred Alternative had to provide a reliable water supply and improve safety at the site. Further, based on input from the public and resource agencies, the issues of boater and fish passage and impacts to environmental resources were critically important factors in the evaluation of alternatives. An alternative that avoided the point of diversion change process but did not meet the Purpose and Need or the goals of the project would have ultimately failed the screening process, as was the case for the No Build Alternative. Of all the proposed alternatives, the project team determined that Alternative 3 was best able to meet the Purpose and Need and the project goals. Additionally, Alternative 3 also avoided the point of diversion permitting process, thus making it the logical Preferred Alternative.

New Pump House

5. In developing the five alternatives, it became obvious that replacement of the existing pump house and pumps with a new pump house and pumps would be necessary for a variety of reasons, including age and deteriorating condition of the existing pumps, condition and future preservation of the existing pump house, and security and reliability of BSB's major raw water source. A decision was made to include this future potential pump house within the scope of this Environmental Assessment. EPA is correct to point out that the pump house should have been discussed as a design option that could be linked to Alternatives 2, 3, 4 and 5, instead of exclusively being tied to Alternative 3. Alternative 3 does not require a new pump house any more than the other Build Alternatives. Accordingly, as noted in Appendix B of this FONSI, the EA now clarifies this issue.

Comment #14, continued

A Storm Water Pollution Prevention Plan (SWPPP) that identifies appropriate sediment and erosion control measures such as fiber mats, catch basins, seeding and revegetation measures, silt fences, coffer dams, and appropriate stormwater treatment systems as prescribed by the Montana DEQ may be needed (see http://www.deq.mt.gov/wqinfo/MPDES/StormwaterConstruction.mcpx). We recommend that the project sponsors contact Brian Heckenberger of the MDEQ (406-444-5310) to ensure that the proposed project will be carried out in proper compliance with storm water construction permitting requirements.

If you have any questions or you would like to further discuss our comments please contact Mr. Steve Potts of my staff in Missoula at (406) 329-3313 or in Helena at (406) 457-5022. Thank you for your consideration.

Sincerely,

Julie A. DalSoglio
Director
Montana Office

cc: Larry Svoboda, Connie Collins, EPA, 8EPR-N, Denver
Toney Ott, 8EPR-EP, Denver
Jeff Ryan, MDEQ, Helena
Vicki Sullivan, Army Corps of Engineers, Helena

Response #14, continued

Bank Stabilization and Construction

6. As noted on page 46 of the EA, during the final design process BSB will consider the use of bioengineered bank stabilization measures where appropriate in order to minimize hardened rock features. BSB will also minimize disturbance of existing vegetation to the extent practicable and ensure proper reclamation through revegetation and reseeding and the use of erosion control measures.

7. As noted on page 70 of the EA, it is anticipated that this project will require a Montana Pollutant Discharge Elimination System (MPDES) General Permit for Storm Water Discharges Associated with Construction Activity from DEQ. A Stormwater Pollution Prevention Plan (SWPPP) would be required as part of the application for this permit. BSB will continue to coordinate with DEQ through the permitting phase to ensure that the proposed project is in compliance with all permitting requirements.

Comment #15

14-Jan-10
Scott Reynolds
1700 Shirley Way
Anaconda, MT 59711
bjsgr1@dishmail.net
January 14, 2010

Thank you for the opportunity to review and make comments on the Draft Big Hole Dam EA. being prepared by DOWL HKM for Butte Silver Bow. I have some questions and concerns that I hope can be answered and addressed in the finial EA.

Fish Passage
Alternative 3, 4, 5
There needs to be some kind of chart or diagram that shows water velocity and water depth at different river flows at various points through the length of the fish passage channel added to the EA. My concern is that the water velocity at any points in the fish passage channel could deny passage of different types or sizes of fish. Will there be enough water depth for passage of fish of different types and sizes? Fish need to be able to move up and down the channel like they can in a natural river channel. Montana FWP needs to confirm that this data is accurate and fish can move freely and at will.

Response #15

Thank you for your comments.

Fish Passage
As noted on pages 47 and 48 of the EA, all Action Alternatives considered velocities of less than 6 fps to be adequate for all species of fish expected in this reach of the river. The final design criteria will focus on channel width, slope and configuration such that velocities through the fish and boat chute will be in the range of 6 feet per second (fps) at flows less than 1,000 cfs. Additional refinement of the final hydraulics will determine the anticipated velocity profiles throughout the reach.

The rock material used for the weir and boat and fish passage channel would be grouted together to ensure structural stability, although the top six inches would remain ungrouted to maintain interstitial spaces for aquatic organisms to seek cover as well as resulting in a breakup and reduction of the velocity vectors. The entire downstream apron will be constructed using native rocks that are grouted together with a hold back of approximately six inches creating interstitial spaces and variability in the velocity profiles. These interstitial spaces coupled with the native rock structure and reduced and intermixed velocity profiles all will aid and be complimentary to aquatic organism and fish passage. The anticipated velocities resulted from the final design efforts will be within the cruising and darting speed ranges of fish species found in the Big Hole River.

BSB will continue to coordinate with FWP through the final design and permitting phases to ensure that the project accommodates fish passage.

Comment #15, continued	Response #15, continued
Boat Passage 1-None of the alternatives 1, 2,3,4,5 have unrestricted navigable boat passage which fit the criteria of a navigable boat channel. The Big Hole River at this location is rated as a Navigable River by the State of Montana. How can you have a navigable river if you can't float through it? Alternative 1,2 are very dangerous at any flows, but at medium flows and below there is opportunity to float and portage on the far left (North) side of the dam but there can be a dangerous situation on the left (North) side if there is log debris stuck in this portage side. Alternative 3, 4, 5 have a design for boat passage, but you cannot float through the boat passage at flows below 300 cfs. Is this total flow (Boat channel + BSB diversion flow) or just (Boat passage channel flow)? There is no design for a portage around the dam to provide passage to get below the structure at flows below 300 cfs. This makes the river not navigable but also not passable around this structure at flows below 300cfs.	**Boat Passage** 1) The State of Montana holds ownership of the land and minerals located below navigable rivers, streams, and lakes and related acreage as established in the Equal Footing Doctrine and Montana statutes. The Montana Department of Natural Resources and Conservation (DNRC) Trust Land Management Division administers these lands on behalf of the state. DNRC considers navigable waterways to be those for which it has historical documentation of commercial use. DNRC has determined that the Big Hole River is commercially navigable from Steel Creek to Divide, Montana. In this context, the definition of navigable does not pertain to recreational floating, nor does it specify flows or times during the year when navigation may or may not be possible.

Comment #15, continued

2-The EA states on page 43 that flows at 300 cfs and below are insufficient for boat passage in the river. According to DNRC flow data, there are numerous days from April 1st to November 30th that have flows of 300 cfs or less and have had boats floating down the river. With river usage at flows of 300cfs and below there needs to be a float through channel to handle this or a portage route around it.

3-There are questions that alternatives 3, 4, 5 boat passage of the EA do not explain. I think of this boat passage as a manmade river channel. The EA needs to clarify which class of floating river water this channel will create for example class 1, class 2, class 3 etc. and at different flows for example 6000cfs, 4000cfs, 2000cfs, 1000cfs, 500 cfs and below. Butte Silver Bow talked about smooth water through this channel at the agency meeting on Nov. 16, 2009, appendix J of the EA. With the elevation drop over the 145 foot length of this boat passage channel, I believe this channel will not be smooth water it will develop some waves, the question is how big of waves? Some people may not feel save floating through this boat channel so there needs to be a boat portage around the dam, there is none in the EA designs.

4- If an overland portage needs to happen at this dam, the question becomes how will this be done? The EA Alternative 3, 4, 5 states that the structure is about 150 feet long. A 50 to 60 yard boat drag would be a major drag and maybe impossible across dry ground. That's a bad thing on a navigable river. If a portage location becomes necessary, the portage needs to be a friendly, passive portage.

Response #15, continued

2, 3, 4) As part of the design process and in coordination with recreational users, the design team identified a defined value of 300 cfs as providing adequate conditions for floating. As noted on page 8 of the EA, portage is required over certain portions of the river both up and downstream of the diversion dam at lower flows. The flow of water in the fish and boat channel and the associated floatability or necessity for overland portage will be dependent upon the instream flow. This project cannot accommodate floating under all river flow conditions because it cannot influence the amount of water in the river. While it may be possible to float on certain stretches of the Big Hole River at flows below 300 cfs, other stretches may be impassable due to shallow water. Based on known floating conditions up and downstream of the diversion dam site, the value of 300 cfs was defined as a reasonable benchmark above which boating passage over this stretch is ensured and below which floating opportunities may be minimized. The design of the diversion dam does not preclude boat passage at lower flows; if there is sufficient water in the river to approach the diversion dam by boat, it will be possible to float through the boat passage channel.

The class of a river or rapid is highly dependent upon many variables including flow, velocity, and obstructions, and is likely to change along with the level of the water in the river. It is important to recognize that at flows above 500 cfs, the entire dam structure will become submerged and its effect on the floating hazard will be minimized as the river flows increase. The intent of the final design will be to create the lowest class of rapid possible at flows between 300 cfs and 3,000 cfs.

The final design will review the potential to provide overland portage along the south bank of the river.

Comment #15, continued

Construction Phase
1-There doesn't seem to be much information in the EA about the construction time period of the new dam. When will it start, when will it be done? What flows are needed to do the work in the river? How long will it take and how much equipment in the river? How much of the river would be blocked and for how long? What kind of grout material will they use to hold the rock in place? What type of rock will be used? In EA 4.2.5 page 49 they state water turbidity will increase during the work, but there is no estimate about how much or what length of time or how they might measure it and control it. There is no mention of public safety during the construction. If there needs to be a public closure of the area what would that area be? Would a boat portage be needed during construction? Certainly, some unsuspecting floater is going to float down and hit the dam construction...then what?

2-At some of the early public meetings they showed some other Alternatives that showed lots of river rip rock this idea was not accepted very well so you don't see it mentioned except on page 46 of the EA which says the final design will determine this. This should be shown in any of the Alternatives where it would be used in the EA.

3-Alternative 3 has a Phase 2 construction of a new pump house. There may be a problem with this. It may not be 150 feet back from the river, which would be in violation of Butte Silver Bow's river set back policy. Butte Silver Bow could get a variance, but that would look very bad to everyone that has been required to follow this policy in the past and will possibly be required to in the future. This is not dealt with in EA.

Response #15, continued

Construction Phase

1) Please refer to Response #4 and #8 regarding construction timing. The specific type of materials used, potential water quality impacts and mitigation measures, construction timing, potential river closure, and safety measures will be determined during the final design and permitting phases of the project. BSB will coordinate with all appropriate agencies to ensure compliance with state, federal, and local requirements.

2) As noted on page 46 of the EA, all proposed hardened rock features are designed to permanently secure the structural components of the rock weir and intake pipe walls to the river's bed and banks. Efforts will be made to minimize use of rip-rap; the extent of these features will be determined during final design.

3) As noted on page 66 of the EA, construction of a new pump house is dependent on future funding availability. In the event that BSB moves forward with plans for a new pump house at some future date, BSB will ensure compliance with all setback policies.

Comment #15, continued

Dam Long Term Maintenance
1-EA doesn't talk about keeping the boat fish channel clear of debris such as logs, brush, rocks, etc. that could block it. Who would be responsible for removal, how would it be removed and what kind of schedule would be followed?

Land Ownership
1-Page 41 of EA has a property ownership map and at the December public meeting I asked how accurate it was? The response I got from DOWL HKM was that they did not know. The EA needs to have a very accurate ownership map of the area so everyone knows what property might be affected by this project private or public.

Flow Data
1-There is a lot of river flow information (cfs) in the EA but there is no mention as to where this data is arrived from. Is it referenced to USGS flow station at Melrose Montana or some other? With so much of this project based on river flows maybe a USGS online gauge station should be installed at this location.

Sincerely,

Scott Reynolds
1700 Shirley Way
Anaconda Montana 59711

Response #15, continued

Dam Long Term Maintenance

1) As noted on page 1 of the EA, the Big Hole River Diversion Dam facility is owned and managed by BSB. Following construction of the new diversion structure, BSB will continue to maintain the facility and remove debris as necessary and appropriate.

Land Ownership

1) The Land Ownership figure has been updated; please refer to Appendix B of the FONSI.

Flow Data

1) As noted on pages 34 and 36 of the EA, modeling efforts were conducted for this project. Appendix D of the EA (entitled Alternatives Analysis Report) provides a full description of these efforts.

   A USGS gauging station will be considered during final design efforts.

Comment #16

TROUT UNLIMITED

January 15, 2010

Dick Talley
Dowl-HKM Engineering
P.O. Box 1009
Helena, MT 59624

RE: Comments on the Butte-Silver Bow Diversion Dam Environmental Assessment

Dear Dick:

This letter contains comments from the George Grant Chapter of Trout Unlimited (GGTU) in regards to Butte-Silver Bow's proposal for the replacement of its diversion dam on the Big Hole River. GGTU supports replacement of the existing structure with a fish and boat friendly design, and we appreciate the opportunity to be involved on the advisory committee during the design development process. The preferred Alternative 3 appears to be an appropriate selection; however, there are many details in final design that could impact the success of this alternative in meeting the eight goals identified in the EA. To that end, we have included comments on some important issues that GGTU feels must be addressed for the project:

Fish and boat passage: The proposed alternative should be designed so that even novice floaters can navigate the fish/boat passage channel. Care should be taken to ensure that exposed rocks in the weirs will not damage boats or create a safety hazard, and that the boat channel is of sufficient size to accommodate floaters. In addition, a portage route should be included in the design for those floaters who wish to go around the dam, or for those boaters that may float below the lower design flow of 300 cfs (small boats/watercraft often still use the river below this level).

Fish passage should be available at all flows, both high and low flows. In addition to spawning periods in the spring and fall, fish passage to find thermal refuge is critical during low summer flows and high water temps. It seems that maximizing the size of the boat channel would be appropriate, as it may also help reduce water velocity and improve fish passage.

Response #16

Thank you for your comments. BSB appreciates your support for this project.

Fish and boat passage:
Features to ensure boater safety, comfort, and adequate portage opportunities will continue to be considered, refined, and incorporated during the final design phase. BSB will continue to work with FWP and others through the final design process to ensure adequate fish passage at the site.

Construction Phase:
BSB will make every effort to minimize river closure and instream construction activities. BSB will publish the construction schedule following approval from FWP and other permitting agencies. Rip-rap will be minimized to the extent practicable and bioengineered stabilization measures will be considered where appropriate.

Miscellaneous Comments:
BSB will develop a plan for debris removal once final design is completed. As noted in previous responses, boater passage will be provided through the proposed boat chute; however, the final design will review the potential to provide overland portage along the south bank of the river. BSB will also consider providing permanent fishing access at the site.

Comment #16, continued

Construction Phase: GGTU understands that construction may create a public safety hazard and that the river may be closed for a period of time. Montana FWP and other permitting agencies will need to approve construction plans, techniques and potential river closures. GGTU feels very strongly every effort should be made to minimize the amount of time the river is closed and also to minimize active equipment work in the river channel. The approved construction schedule should be published to ensure that the public is aware of the closure, and an emergency/construction portage route should be considered for safety purposes.

Rip rap and hard bank treatments should be minimized as much as possible to anchor design elements, and bioengineered banks should be utilized as much as possible.

Miscellaneous Comments: The new design should consider the potential for logs and other debris to hang up on the weir structure, potentially causing public safety problems. A plan for debris removal should be addressed. The potential for debris is also another reason for including a portage route in the final design. A final comment would be for BSB to consider allowing permanent fishing access at or near the dam.

GGTU would like to reiterate that it supports the replacement of the Big Hole Diversion Dam, and that the new design will result in a significant improvement to the fishery and recreationists on the Big Hole River. We would appreciate continued involvement in the process as the project moves forward.

Sincerely,

Josh Vincent

Josh Vincent
President
George Grant Chapter of Trout Unlimited

Response #16, continued

Comment #17

United States Department of the Interior
Fish and Wildlife Service
Montana Ecological Services Field Office
585 Shepard Way
Helena, Montana 59601-6287
Phone: (406) 449-5225 Fax: (406) 449-5339

January 15, 2010

Big Hole River Diversion Dam

Sara Nicolai
Project Planner
DOWL HKM
P.O. Box 1009
Helena, MT 59624

Dear Ms. Nicolai:

The Montana Field Office of the US Fish and Wildlife Service (Service) has reviewed the draft Environmental Assessment (EA) for the Big Hole River Diversion Dam project in accordance with Service responsibilities under the US Endangered Species Act (ESA) and Fish and Wildlife Coordination Act (FWCA).

The Service recognizes the existing Big Hole River diversion dam is in poor condition and that action is needed to ensure a reliable source of water for Butte, Montana and improve safety at the same site for maintenance personnel and recreationists. As such, the Service supports the project goals stated on pg. 5 of the EA, including:

- Providing a reliable source of potable water for the Butte-Silver Bow service area
- Reducing maintenance requirements
- Reducing icing problems
- Improving boat passage safety
- Minimizing impacts to environmental resources
- Improving safety for maintenance personnel
- Minimizing project costs

There are currently no ESA-listed fish or wildlife species in the project area. However, the fish species Arctic grayling (*Thymallus arcticus*) is considered a Species of Concern by Montana. In addition, the Service is partnering with state agencies, Federal agencies, and private landowners in the upper Big Hole River basin to implement a Candidate Conservation Agreement with Assurances (CCAA) to benefit Arctic grayling in the Big Hole River. As such, our comments on the draft EA focus on the potential effects the proposed action may have on this

Response #17

Thank you for your comments. BSB appreciates USFWS' involvement and participation in this project.

Throughout the project development process, BSB has coordinated with independent fisheries biologists and FWP representatives regarding the potential implications of providing fish passage at the diversion dam site. Based on these consultation activities, BSB understands that non-native species have already colonized upstream reaches of the Big Hole River above the diversion dam. Given the opportunity to restore fish passage and provide greater connectivity, FWP has indicated that they consider removal of the dam to provide a net benefit from a fisheries perspective.

On pages 48 and 65, the EA states that "the re-establishment of fish passage at the Big Hole Dam is considered a substantial benefit to fish populations utilizing this portion of the watershed." This argument is based on studies that indicate habitat connectivity is crucial in sustaining fluvial life histories of grayling, whitefish, and both native and non-native species of trout. The benefits of providing unobstructed connectivity of suitable fish habitat were confirmed through informal consultation with FWP.

Comment #17, continued

species. In particular, we would like to call to your attention potential issues with Goal 4: Improving fish passage (EA, pg. 5).

The Service generally supports efforts to improve fish passage and provide connectivity among habitats needed for native fish species. Indeed, one of the objectives of the CCAA is to improve fish passage within the upper Big Hole River. However, it is widely recognized that restoring fish passage may potentially increase threats to native fish species in cases where nonnative fish species may further invade and compete with or eat the native species (Fausch et al. 2006). In fact, both the draft EA (pg. 34) and Biological Resources Report and Wetland Delineation (Appendix F, pg. 15) recognize that fish passage barriers are often used with the intent of benefitting native species (by precluding invasion of nonnatives). Ultimately, given the presence of abundant nonnative trout species below the existing dam (especially brown trout, *Salmo trutta*) we are concerned that the EA and supporting documentation do not provide a firm basis for concluding that replacing the dam to provide fish passage will provide "a substantial improvement for fish populations" (EA, pg. 48) with respect to Arctic grayling. At a minimum, the EA should acknowledge that there is considerably uncertainty for how restoring fish passage at the dam will affect Arctic grayling.

Alternatives 3, 4 and 5 are designed to facilitate year-round fish passage at the rebuilt dam and diversion facility. The Service has no reason to believe that any of the designs will not accomplish this goal, thus we generally agree with the EA's conclusion that these three alternatives would result in improved fish passage "during all times of the year" (pg. 48) and likely result in "unrestricted fish passage at this site" (pg. 48) at least for adult fishes. The EA then concludes that "the re-establishment of fish passage at the Big Hole Dam is considered a substantial benefit to fish populations utilizing this portion of the watershed" (pg. 48). This conclusion supposes that restoring fish passage will not have any negative effect on fish species relative to the current condition. Nonnative trout species are considered a threat to Arctic grayling (http://www.fisheries.org/units/AFSmontana/ArcticGrayling.html) and the Service is particularly concerned about interactions between Arctic grayling and predatory brown trout. The EA attempts to deal with this issue by observing that nonnative brown trout, rainbow trout and brook trout are already established above the existing dam structure, thus "removal of the dam would not allow upstream migration of these species to areas where they do not currently exist" (pg. 34-35). The Service observes the following with respect to the above:

- The EA does not mention the distinction between the nonnative fish occurring above the current dam and the potential for increased distribution and population densities of those species if fish passage were restored. Since fish passage (under Alternatives 3, 4 and 5) would be restored and the EA concludes a benefit to the fishery resource, then we presume the derived "benefit" must be represented in some population-level response by the affected fish populations.

- The EA does not consider how the potential for increased densities and distribution of nonnative trout species may negatively affect Arctic grayling. For example, Service staff has received anecdotal reports from anglers stating that brown trout congregate in the

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Response #17, continued

BSB understands USFWS's perspective that there are many uncertainties regarding the long-term effects that removing the diversion dam may have on the arctic grayling. At this time, it is unknown whether removal of the barrier will expedite non-native colonization in the upper Big Hole watershed, and if providing passage will result in an increase in competition and predation of arctic grayling by non-native species. BSB acknowledges that greater access and passage opportunities may result in a change in distribution of non-native fish species, although any potential changes are unknown at this time.

BSB will continue to work with USFWS and FWP should a selective capture program or fish migration study be considered by these agencies in the future.

As noted in Appendix B of this FONSI, the EA now acknowledges USFWS' concerns and contains a more detailed discussion regarding these issues.

Comment #17, continued

spring and early summer near the mouths of tributary streams where grayling spawn (e.g., Lamarche and Fishtrap creeks). With unrestricted fish passage at the Big Hole Dam isn't it reasonable to assume that more large brown trout would be present, thus increasing the likelihood of predation on vulnerable Arctic grayling?

- The removal of the dam would indeed "open the gates" in terms of facilitating more frequent migration and dispersal of brown trout into the upper Big Hole River watershed, with unknown possible effects on Arctic grayling.

- The EA appears to presuppose that no management alternatives exist for addressing nonnative trout, since they have already established populations above the existing dam. Thus, removing the dam will not make things worse. While the EA recognizes that passage barriers can serve as management tools, it does not mention that there are other management tools for addressing threats or perceived threats from nonnative trout, such as mechanical removal of these species. Nonnative fish suppression programs designed to benefit native fishes have been most successful in small headwater streams, but have also been implemented in some larger river systems, to varying effect (Tyus and Saunders 2000; Hawkins et al. 2005; Mueller 2005). The fact that a nonnative suppression program has never been attempted in the Big Hole River cannot be used to support the conclusion that a fish passage barrier would not facilitate a well-designed and executed nonnative trout suppression program (to benefit Arctic grayling) by limiting the reinvasion of undesirable species.

- The EA does not explicitly consider or otherwise state that considerably uncertainty exists concerning how restoring fish passage may affect Arctic grayling in the Big Hole River. The EA posits that fish passage is inherently good (see Service concerns noted above), but even if that were likely there are no data presented to support this argument. For example, occurrence of grayling in the pool downstream of the existing dam during the (spring) spawning migration might be evidence that spawning fish are unable to return to their natal steams and are lost to the spawning population. The Service suggests you contact Montana Fish, Wildlife and Parks to determine if such information exists, and if so, include it in the revised EA. We also note that the uncertainty and apparent lack of empirical information about how removing the Big Hole Dam will affect grayling precludes a firm conclusion for the likely effect on grayling. For example, given the paucity of data one could make exactly the opposite argument about the effect of the existing dam, i.e., while mainstem dams clearly impede fish passage for migratory fishes such as grayling, the presence of the Big Hole Dam has actually facilitated the persistence of grayling in the upper Big Hole River by slowing the invasion of brown trout. The higher density of grayling above the dam and the higher density of brown trout below the dam are consistent with this alternative interpretation.

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Response #17, continued

Comment #17, continued

We recommend the following:

- The revised (final) EA carefully considers the Service's comments with respect to the preferred alternative may affect Arctic grayling.

- Among the final design considerations (EA, pg. 69) should be options for channeling or diverting river flow through the dam structures (e.g., construction and intake chutes) that would accommodate or could be retro-fitted to facilitate fish capture, via weir or fish trap. This would permit the study of fish migration in the vicinity of the dam, and facilitate selective passage of certain fish species (e.g., upstream passage for grayling but not brown trout) should that be identified as a fishery management need. We encourage you to contact Jim Olsen with Montana Fish, Wildlife and Parks and my staff should you have any questions or require technical assistance.

Thank you very much for keeping the Service informed concerning the Big Hole River Diversion Dam project. We appreciate your efforts to incorporate fishery resource concerns into your project planning. If you have questions or comments related to this issue, please contact Doug Peterson at 406-449-5225 extension 221.

Sincerely,

R. Mark Wilson
Field Supervisor

Fausch, C., B. Rieman, J. Dunham, and M. Young. 2006. Strategies for conserving native salmonid populations at risk from nonnative invasions: tradeoffs in using barriers to upstream movement. USDA Forest Service, Rocky Mountain Research Station, GTR-RMRS-174, Fort Collins, CO. [available at: http://www.treesearch.fs.fed.us/pubs/24470]

Mueller, G. A. 2005. Predatory fish removal and native fish recovery in the Colorado River main stem: what have we learned? Fisheries 30(9):10–19

Tyus, H.M. and J.F. Saunders, III. 2000. Nonnative fish control and endangered fish recovery: lessons from the Colorado River. Fisheries 25(9):17-24.

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Response #17, continued

Comment #18

Steve Luebeck
17 Queen's Ct., Butte, MT 59701
(406) 494-6216
Sluebeck@gmail.com

January 15, 2010

Dick Talley
Dowl-HKM Engineering
P.O. Box 1009
Helena, MT 59624

RE: Comments on the Butte-Silver Bow Diversion Dam Environmental Assessment

Dear Dick:

Please accept these comments on Butte-Silver Bow's proposal for the replacement of its diversion dam on the Big Hole River. I support replacement of the existing structure with a fish and boat friendly design, and appreciate the opportunity to be involved on the advisory committee during the design development process.

As you are aware, the existing structure was built during a period of very little environmental oversight, and has a history of killing people who fail to portage around the existing dam. Butte Silverbow has an opportunity to not only achieve its ultimate goal of providing drinking water to the community of Butte, but to also make a significant improvement in the current conditions, in terms of public safety and in the environment of the Big Hole River. The preferred Alternative 3 appears to be the appropriate choice; however, please accept the following comments, that I believe are critical to the ultimate success of the project:

Fish and boat passage: First, the EA improperly assumes that there is no floating on the Big Hole River below 300 cfs. This assumption is incorrect. Floating is common on the Big Hole River below 300 cfs, a flow level that the river reaches almost annually, sometimes beginning as early as mid July. I personally float the canyon section of the Big Hole River, between Wise River and Silver Bridge, at flows below 300 cfs almost every summer. I would float all the way to the Divide Fishing Access site, except for the complexity of navigating around the existing Butte Water System Dam. Outfitters and other members of the public regularly float the river below 300cfs. The boat passage channel must provide passage at flows below 300 cfs, or another simple form of portage must be developed into the design of the project.

The proposed alternative should be designed so that even novice floaters can navigate the fish/boat passage channel. Many of the people killed at the existing dam were not outfitters or experienced oarsmen, but casual members of the recreating public. The boat passage channel needs to be designed for simple passage so that the lowest common denominator of floaters can safely pass the dam.

Care should be taken to ensure that exposed rocks in the weirs will not damage boats or create a safety hazard. As stated earlier a simple portage route must be included in the design for those floaters who wish to go around their dam. Currently, Butte Silverbow requires portage on the left bank of the river around the existing dam. There are at least two signs on the river above the current dam instructing floaters to portage on the left bank around the dam. Providing for portage around the proposed replacement structure is a reasonable, necessary step.

Response #18

Thank you for your comments. BSB appreciates your support for this project.

Fish and boat passage:
Please see Response #15 in reference to the benchmark value of 300 cfs. It should be noted that the design of the diversion dam will not preclude boat passage at flows lower than 300 cfs; if there is sufficient water in the river to approach the diversion dam by water, it will be possible to float through the boat passage channel. Features to ensure boater safety, comfort, and adequate passage opportunities will continue to be considered, refined, and incorporated during the final design phase. BSB will continue to coordinate with FWP through the final design and permitting phases to ensure that the project accommodates fish passage.

Construction Phase:
Please refer to Response #4, #8, and #15 regarding construction timing. Construction timing, potential river closure, and safety measures will be determined during the final design and permitting phases of the project. BSB will coordinate with all appropriate agencies to ensure compliance with state, federal, and local requirements.

Comment #18, continued

Fish passage should be available at all flows, both high and low flows. In addition to spawning periods in the spring and fall, fish passage to find thermal refuge is critical during low summer flows and high water temps.

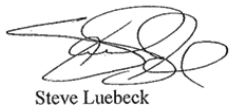
Construction Phase: While not stated in the EA, Butte Silverbow and its engineers have indicated in public comments, that closure of the river in the construction area maybe necessary to protect public safety. Montana FWP and other permitting agencies will need to approve construction plans, techniques and potential river closures. If closure of the river becomes necessary, every effort should be made to minimize the amount of time the river is closed and also to minimize active equipment work in the river channel. The approved construction schedule should be published to ensure that the public is aware of the closure, and an emergency/construction portage route must be developed. Certainly come unsuspecting floater will bump into the construction zone…….then what?

Rip rap and hard bank treatments should be minimized as much as possible.

Miscellaneous Comments: The new design should consider the potential for logs and other debris to accumulate on the weir structure, potentially causing public safety problems. A plan for debris removal should be addressed. The potential for debris is also another reason for including a portage route in the final design.

I reiterate that I support the replacement of the Big Hole Diversion Dam, and that the new design will result in a significant improvement to the fishery and recreating public on the Big Hole River, but request that the above issues be addressed in the final design.

Sincerely,



Steve Luebeck

Cc: Montana Fish, Wildlife and Parks
Montana DNRC
Montana DEQ
EPA
USFWS
Army Corp of Engineers

Response #18, continued

Miscellaneous Comments:

Please see Response #15 and #16. BSB will develop a plan for debris removal once final design is completed. As noted previously in comments and responses, boater passage will be provided through the proposed boat chute; however, the final design will review the potential to provide overland portage along the south bank of the river.

Comment #19

Montana Fish, Wildlife & Parks

1820 Meadowlark Lane • Butte, MT 59701

January 11, 2010

Sarah Nicolai
Dowl HKM
P.O. Box 1009
Helena, MT 59624

Dear Ms Nicolai,

Thank you for the opportunity to review the EA for the replacement of the Butte Water diversion on the Big Hole River. I feel the EA was well prepared and concise. I have also been satisfied by the outreach Butte Silverbow has done with permitting agencies and the public to keep us abreast of the plans and changes as they have evolved. The conference call held on Jan. 7 was also helpful in abating many of the concerns I had. Below are listed fisheries related concerns and requests for more information on certain aspects of the proposed project and the preferred alternative:

1. I support the selection of alternative 3 as having the least impact on fisheries as long as the majority of the river flows are passed through the boat chute/fish passage channel during all times of the year, with the exception of extreme winter icing events. To verify that this will be the case, I would request that a flow operations diagram be developed and included in the final EA that indicates what water elevations and flows will be in both the intake and boat passage chute at various river flow under 500 cfs that are typical for the Big Hole River. For example, when the river is at 300 cfs (lowest floatable flows), how much water will be going through the boat chute and how much will be going through the intake chute and similarly at 200 cfs and 150 cfs, etc. To ensure year-round fish passage at the site, it is imperative to understand how much water will be expected to flow over the fish passage chute at different times of year under different river flows. I understand that during extreme icing events it is advantageous to the maintenance of the water intake to increase flows and velocity through the water intake chute; however, I would request information detailing what expected flows through the intake and boat chutes would be during such an event.

2. The EA does not adequately describe how construction will occur and the potential impacts of these activities on the river and recreationists in the area. Because these activities could have substantial temporary impacts (i.e., moving the river from one side of the valley to the other and back again) they should be mentioned in the EA. Further, how the riverbed and banks will be reclaimed should be detailed. It was noted in the EA the value of the pool immediately upstream of the existing dam. I would assume that in order to move the river

Response #19

Thank you for your comments. BSB appreciates FWP's involvement and participation in this project.

1. It is important to understand the proposed operation of the intake chute control valve and the corresponding upstream water surface elevation and ultimately flow through the boat and fish passage channel for Alternative 3.

   As noted in previous responses, the proposed dam and control valve on the intake structure will be designed to maintain an upstream water surface elevation of at least 5,419 feet, as this is the required elevation to generate sufficient head to avoid cavitation in the pumps. To achieve an upstream water surface elevation of at least 5,419 feet, the control valve in the intake chute will need to closed or raised such that it "checks" up the river sufficiently to maintain this elevation. The weir on the boat and fish passage channel is proposed at elevation 5,417.5 feet, which ensures that river flow is maintained through its entirety when the upstream water surface elevation is at least 5,419 feet.

   The importance of this discussion is that operationally, BSB will need to maintain the upstream water surface elevation of at least 5,419 feet to operate the pump station and, by doing, so will ensure flow through the boat and fish passage channel. It is not possible to divert the entire river flow through the intake chute and leave the boat and fish passage channel dry as, by doing so, the upstream water surface elevation will be lowered to below 5,417.5 feet, and hence the pump station will be unable to operate.

   The table below illustrates the anticipated flows through the boat and fish chute and the intake chute at various total river flows and at various control valve elevations. It is important to note that an intake chute control valve elevation of at least 5,418.5 feet is needed to maintain an upstream water surface elevation of at least 5,419 feet. As described above, an upstream water surface elevation of at least 5,419 feet is needed to provide sufficient head for operation of pumps.

Comment #19, continued

from side to side, this pool would have to be partially filled. I would like to know the source of material for the dike that will be construction to move the river and see detailed how the river will be restored to its prior condition upstream of the new diversion post construction. A construction plan detailing the intended construction timeline should also be included and what measures will be taken to ensure public safety during these activities.

3. It is unclear if the grouting of rock and the grout depth will impact fish and aquatic organism passage. Most juvenile fish and aquatic invertebrates use the interstitial spaces between rocks as habitat because of reduced water velocities in these areas. Grouting rock fills in these areas and likely increases stream velocity near the bed of the river and may affect passage of poor swimming organisms. It is also unclear if grout depth will affect stream velocity around rocks and if the proposed 6 inches of exposed rock is adequate to reduce stream velocities and allow juvenile fish and other aquatic organism passage.

4. At what flows and frequency of occurrence are velocities less than 6ft/sec present over the structure? The EA states that at the 100-year flood, areas of the structure are predicted to have velocities of 6-8 ft/sec. At typical high water (8000 cfs), intermediate flows (1000-3000 cfs) and typical lower water conditions (300-500 cfs), what are the predicted water velocities at the project location?

5. Rock placement in the boater chute should not produce protruding sharp rock surfaces that could injure floaters, swimmers or their equipment.

6. Providing foot access from the old highway to the river through Butte-Silverbow property in a safe location upstream and/or downstream of the diversion would provide additional pubic benefit to the proposed project.

Upon completion of the Final EA and the 75% construction drawings (end of January), Fish, Wildlife and Parks will request a secondary review of the design by a qualified, independent third-party. We have requested the third party review the structure and design for potential impacts to fish and aquatic organism passage and to review the hydrologic condition of the drops during various flows for safe floater passage. Upon completion of this review, requests to modify the proposed design and construction plan may be made it such modifications would benefit the fishery or recreation on at the project site. Such a request would be made during the permitting process. Overall, I am very pleased with the environmental analysis and the preferred alternative and think that it will be a significant fisheries and recreational improvement over the existing structure.

Sincerely,

Jim Olsen
Big Hole River Management Fish Biologist

Response #19, continued

Flow Volume Partitioning at Various River Flows and Intake Chute Control Valve Elevations

Elevation of Intake Chute Control Valve (ft)	Component	Total River Flow (cfs)			
		200	300	400	500
5418.50	Boat/Fish Channel	170	220	248	270
	Dam Crest	0	8	62	124
	Intake Chute	30	73	91	106
5419.00	Boat/Fish Channel	193	234	260	282
	Dam Crest	0	31	92	160
	Intake Chute	7	35	48	60
5419.50	Boat/Fish Channel	200	243	268	291
	Dam Crest	0	51	118	187
	Intake Chute	0	6	14	22
5420.00	Boat/Fish Channel	200	245	272	296
	Dam Crest	0	55	128	205
	Intake Chute	0	0	0	0
5420.50	Boat/Fish Channel	200	245	272	296
	Dam Crest	0	55	128	205
	Intake Chute	0	0	0	0

Comment #19, continued

C: Pat Flowers, R3 Supervisor
Bruce Rich, R3 Fisheries Manager
George Grant Chapter of Trout Unlimited
Skyline Sportsmen
Anaconda Sportsmen

Response #19, continued

2) Please refer to Response #4 and #8 regarding construction timing. The specific type of materials used, potential water quality impacts and mitigation measures, construction timing, potential river closure, and safety measures will be determined during the final design and permitting phases of the project. BSB will coordinate with all appropriate agencies to ensure compliance with state, federal, and local requirements.

Final design details will also include design and construction requirements of the various cofferdams and control measures for site dewatering and diversion of the river flows away from construction activities. BSB is contemplating the use of artificial coffer dams such as inflatable dams, stand up fabric dams, and/or sheet piling to minimize or eliminate the potential for importing fill material into the river to construct the required coffer dams and thereby minimize the potential for sediment release in the stream during construction activities.

All riverbed and stream banks that are disturbed during construction will be restored and revegetated with native species as currently exists.

Please see Response #4, #8, and #15 regarding anticipated construction timing, A construction timeline detailing specific activities and durations will be made publicly available following the final design and permitting phases of this project.

Comment #19, continued	Response #19, continued
	3) The use of grouted rock is necessary to establish the permanence of the structure. It is believed that the grout will minimally affect fish habitat, although FWP is correct to note that the full effects of grouting are unknown at this time. Macro-invertebrates can utilize grouted rocks to attach themselves and small fish may be able to utilize the interstitial spaces between grouted rocks. As noted on page 14 of the EA, the grout would be placed such that at least six inches of the rock would be exposed to create an ideal environment for aquatic organisms. A previous example of this type of grouted rock surface and its effect on aquatic organism passage can be seen and referenced on a similar project known as the Republican Diversion on the Bitterroot River near Hamilton, Montana. In addition, hydraulic modeling will be completed on the final design surface features to better understand the interstitial spaces and corresponding velocity profiles as part of the final design efforts. 4) As the final design progresses, both two- and three-dimensional hydraulic modeling will be conducted for the proposed dam, channel, rest pools, and apron. Velocity profiles will be created at the various flows and will accompany the corresponding permit applications prior to the final design being accepted for construction. 5) The boat chute will be designed and constructed to ensure the safety of recreational users and their equipment. 6) During the final design process, BSB will consider providing public recreational access at the site.

Comment #20

Date: January 15th, 2010

To: Whom it may concern

From: Fred Boyer

I have concerns over the Draft Big Hole Dam EA being prepared by DOWL HKM for Butte Silverbow. At low is their adequate water flow for the fish to move up and down the river? What kind of portage will be provided for floaters taking into consideration the weight of drift boats?

Please contact me if you have any questions.

Sincerely,

Fred J. Boyer

Response #20

Thank you for your comments. This project will restore fish passage at the site by removing the existing diversion dam and replacing with a new structure designed to facilitate boat and fish passage. Please refer to Response #19 regarding flows and associated fish passage opportunities.

As noted in previous responses, boater passage will be provided through the proposed boat chute; however, the final design will review the potential to provide overland portage along the south bank of the river.

Comment #21

SKYLINE SPORTSMEN'S ASSOCIATION, INC.
P. O. BOX 173 BUTTE, MONTANA 59701

14 Jan 2010

RECEIVED
JAN 15 2010
DOWL HKM

Dick Talley, Project Manager
130 North Main St.
Butte, MT. 59701

Dear Sir:

Our group would like to incorporate Scott Reynolds comments as part of our comments with the exception that any closures of the Big Hole River or variances on boat passage and safety should be handled through our Fish & Game commissioners. They have the legal stand and expertise to evaluate these issues while still involving public input. DOWL HKM requests should be made directly to them so that any future requests for closures or variances will not be abused. The commissioners would adhere to the Stream Access laws while taking Public Safety into consideration.

Your consideration of these concerns will be greatly appreciated.

Tony Schoonen
Director

Response #21

Thank you for your comments. Please see Response #4, #8, and #15 regarding potential temporary river closure during the construction period. BSB will coordinate with FWP in accordance all applicable regulations.

Comment #21, continued

Steve

From: <bjsgr1@dishmail.net>
To: "Steve Leubeck" <sluebeck@fairmontmontana.com>
Sent: Tuesday, January 12, 2010 7:48 PM
Subject: Public comments EA replacment of Butte water diversion on Big Hole River

January 12, 2010

Thank you for the opportunity to review and make comments on the Draft Big Hole Dam EA.being prepared by DOWL HKM for Butte Silverbow. I have some questions and concerns that I hope can be answered and addressed in the finial EA.

Fish Passage
Alternative 3,4,5
1- Some kind of chart or diagram that shows water velocity and water depth at different river flows at different points through the length of the fish passage channel. The concerns are, is the water velocity at any points in the fish passage channel going to deny passage of different types or size of fish, is there going to be enough water depth for passage of fish of different types and size. Fish need to be able to move up and down the channel like they can in a natural river channel. Montana FWP needs to confirm that this data is accurate and fish can move freely and at will.

Boat Passage
1-None of the alternative 1,2,3,4,5 have unrestricted navigable boat passage which fit this criteria of a navigable boat channel. The Big Hole River at this location is rated as a Navigable River by the State of Montana. How can you have a navigable river if you can't float through it? Alternative 1,2 are very dangerous at any flows, but at medium flows and below there is opportunity to float and portage on the far left (North) side of the dam but there can be a dangerous situation on the left (North) side if there is log debris stuck in this portage side. Alternative 3,4,5 have a design for boat passage, but you cannot float through the boat passage at flows below 300 cfs. Is this total flow (Boat channel + BSB diversion flow) or just (Boat passage channel flow)? There is no design for a portage around the dam to provided passage to below the structure in the EA. So the river is not navigable but is also not passable around this structure at flows below 300cfs.

2-The EA states on page 43 that flows at 300 cfs and below are insufficient for boat passage in the river. If you look at DNRC flow data there are lots of days from April 1st to November 30th that have flows of 300 cfs or less and these days have had lots of boats floating down the river. With river usage at flows of 300cfs and below there needs to be a float through channel to handle this or a portage route around it.

3-There are questions that alternatives 3, 4, 5 boat passage of the EA does not explain . I think of this boat passage as a manmade river channel and the EA needs

Response #21, continued

Comment #21, continued

to explain which class of floating river water this channel will create for example class 1, class 2 , class 3 etc. and at different flows for example 6000cfs, 4000cfs, 2000cfs, 1000cfs, 500 cfs and below. Butte Silver Bow talks about smooth water through this channel at the agency meeting on Nov. 16, 2009, appendix J of the EA. With the elevation drop over the 145 foot length of this boat passage channel, I believe this channel will not be smooth water it must develop some waves the question is how big of waves? Some people may not feel save to float through this boat channel so there needs to be a portage around the dam, there none in the EA designs.

4- If a overland portage needs to happen at this dam the question becomes how will this be done? EA says that Alternative 3,4,5 the structure is about 150 feet long and a 50 to 60 yard boat drag would be a.....major drag. maybe impossible across dry ground and that's a bad thing on a navigable river. If a portage location becomes necessary, the portage needs to be a friendly passive portage.

Construction Phase

1-There doesn't seem to be much info. in the EA about the construction time period of the new dam. When will it start, when will it be done? What flows are needed to do the work in the river? How long will it take and how much equipment in the river? How much of the river would be blocked and for how long? What kind of grout material will they use to hold the rock in place. What type of rock will be used? In EA 4.2.5 page 49 they state water turbidity will increase during the work, but there is no estimate about how much or what length of time or how they might measure it and control it. No mention of public safety during the construction. If there needs to be a public closure of the area what would that area be? Would a boat portage be needed during construction? Certainly, some unsuspecting floater is going to float down and hit the dam construction...then what?

2-At some of the early public meetings they showed some other Alternatives that showed lots of river rip rock this idea was not accepted very well so you don't see it mentioned except on page 46 of the EA which says the final design will determine this. This should be shown in any of the Alternatives where it would be used in the EA.

3-Alternative 3 has a Phase 2 construction of a new pump house. There may be a problem with this? It may not be 150 feet back from the river,which would be in violation of Butte Silverbow river set back policy. They could get them self a variance, but that would look very bad to everyone they have required to follow this policy in the past and in the future. This is not dealt with in EA.

Dam Long Term Maintenance

1-EA doesn't talk about if the boat fish channel will be keep clear of blocking debris logs, brush, rocks, etc. Who would remove it, how it would be removed and what kind of schedule would it be removed at?

Response #21, continued

Comment #21, continued

Land Ownership
1-Page 41 of EA has a ownership map. At the December public meeting I asked how accurate it was? The response I got from DOWL HKM was that they did not know. The EA needs to have a very accurate ownership map of the area so everyone knows what property might be effected by this project private or public.

Flow Data
1-There is a lot of river flow information (cfs) in the EA there no mention where this data is arrived from. Is it referenced to USGS flow station at Melrose Montana or some other? With so much of this project based on river flows maybe a USGS online guage station should be installed at this location.

Sincerely,

Scott Reynolds
1700 Shirley Way
Anaconda Montana 59711

Response #21, continued

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Appendix D: Agency Correspondence Received After Close of Comment Period

The following agency correspondence was submitted in writing after the close of the formal public comment period, but is included here in the interest of fully acknowledging and responding to agency concerns.

Comment I

From: Wetzler, Lynn NWS [mailto:Lynn.Wetzler@usace.army.mil]
Sent: Tuesday, February 09, 2010 8:54 AM

Dick,
I hope you received comments from Helena Regulatory that included the comments from our Environmental Coordinator in Omaha who reviewed this EA. I know the comments were due in mid-January, but I wanted to send these along in the event that they were not received.
Best,
Lynn

Lynn,

Some comments from review of the Big Hole EA:

1. Alternatives: Was there any thought to an "L" shaped dam? The lower (short) part of the "L" would come out from the north bank to provide an area for increased elevation for pumping. The longer part of the "L" would extend up-river some distance sufficient to "trap" enough water for pumping. This would leave the southern half of the river open for unimpeded fish and boating movement.

2. Page 12. Suggest identifying this Alternative (3) as the Preferred Alternative in this section.

Response I

1. Multiple configurations for the dam were considered, including an "L" type structure as noted. The engineering goals of the project included maintaining or improving the available head or upstream water surface elevation required to ensure the operation of the existing pumps. An "L" shaped structure would need to be located a considerable distance upstream to realize sufficient elevation gain necessary to achieve the desired upstream water surface elevation of approximately 5419.50 feet, particularly at the lower river flows (< 500 cfs). A conceptual design such as an "L" configuration was initially considered using rock weirs approximately 600 to 700 feet upstream of the current dam location. Based on early reviews with agencies, it was determined that this proposed concept would have resulted in greater environmental impacts to the river, would have required a change in the point of diversion, and would have required additional land acquisition or permanent easements both with the Montana DNRC Trust Lands and with private landowners to facilitate the increased piping and intake structure. For these reasons, the "L" shaped concept was considered infeasible during the development of alternatives.

2. The Preferred Alternative is intentionally identified in Chapter 5 after the screening results are presented. It might appear pre-decisional to identify the Preferred Alternative in Chapter 2 before relative impacts and other factors are discussed with respect to each alternative.

Comment I, continued	Response I, continued
3. Page 14, top of page. How does grouted rock form a natural channel? Would be better if no grout was used. This also would be a good place to briefly discuss water quality minimization measures or BMP to explain how the grouting would not impact water quality.	3. Grouting is necessary in order to ensure the structural stability of the rock weir. Without grout, heavy seasonal flows would wash away portions of the weir every year, requiring intensive maintenance and repair on an ongoing basis. The grout will serve as a structural element in securing the integrity of the dam, the stepped pools and the backwater apron of the proposed dam. As noted in earlier discussions, the construction sequencing is anticipating the use of temporary coffer dams to re-route the river flow away from the actual construction area. During placement of the rocks and the grout, the construction area will be de-watered and void of free flowing water. As a result, the grout placement will not have any impact on water quality. Once the grout has cured and the surfaces of the exposed rocks have been cleaned, water will be allowed to resume flow over the recently constructed area with minimal or no effects on water quality. The final details of construction sequencing and techniques, along with final grout placement details and limits, will be addressed during final design and permitting efforts.

Comment I, continued

4. Page 14, Third full paragraph, second sentence beginning, "The primary intake…". This sentence talks about the inclusion of screens for SEDIMENT REMOVAL. Table 4.4 under Fisheries states: "screened intake may reduce fish losses." Additional verbage on how fish would be screened, screen types, approach velocities, ect. needs to be provided on page 14 (or there-abouts) to justify the reduced entrainment claimed in Table 4.4.

Response I, continued

4. The intent of the intake chute is to provide a volume of water in an acquiescent state with low velocities. The north side of the intake chute will be fitted with a series of screened openings of 2 to 4 square inches in area. These openings will be located close to the floor of the chute to allow for passage of larger floating debris on the surface. The water will be drawn off at the lower elevation to avoid contamination with floating sticks, leaves and debris. Water will flow from the intake chute into an adjoining collector box that will house a series of actual intake screens. These screens will be fitted with finer openings approximately one-tenth square inch in size that will preclude the entrainment of finer soils, sands, gravels, and fish. Water will enter this series of intake screens, which will be manifolded into a pipe for delivery of flow to the pump suction header piping. Final screen size, total area of openings to minimize head loss over a range of diversion flows, provisions for periodic cleaning or clearing of the screens, and approach and passing velocity profiles will be determined and addressed in the final design and permitting activities. The goals of the final design will be to minimize the approach velocities and optimize the screen size and opening size to balance head loss and operational efficiency of the screens with exclusion of fish and debris from entering the intake piping.

Comment I, continued	Response I, continued
5. Page 21, Table 2.4 under Alternative 3, 3rd bullet. Here the "slotted screen" used to block sediment is refered to as either the butterfly gate or Obermeyer gate. Neither of these gates would be effective at minimizing entrainment of fish unless fully closed (butterfly gate) or fully inflated (Obermeyer gate) which would then prevent intake of water. Difficult to claim fishery benefits via reduced entrainment.	5. This point is well noted in that the text in Table 2.4 has fostered a misunderstanding of intake screens as compared to the intake control valve. The intake screen assembly is described more fully in the response to Item 4 above. The intake control valve (butterfly valve or Obermeyer gate) will be located on the downstream end of the intake chute and its only purpose will be to provide variable control of the upstream water surface elevation both in the intake chute and in the river channel. See previous discussions regarding the proposed operations protocol for control of this valve assembly in maintaining adequate upstream water surface elevations and the effect on corresponding flows through the boat and fish passage chute, the intake chute, and over the crest of the dam at various total river flow conditions. As noted in Appendix B of this FONSI, Table 2.4 has been edited to delete reference to either the butterfly gate valve or the Obermeyer gate valve to clear up this misunderstanding.

Comment I, continued

6. Page 45, Section 4.2.2 Vegetation. Alt 3 would permanently impact 0.13 acres of riparian vegetation for bank armoring. The "Mitigation for Action Alternatives" doesn't specifically state that the 0.13 acres would be offset. Will 0.13 acres of riparian vegetation be planted to offset the impact or not? The section states "will be considered" and "may be used". Suggest a commitment be made here to actually offset the impact such as that provided under Wildlife.

7. Page 49, top of page, partial paragraph. Suggest providing some specifics on "screened intakes" so better show how entrainment will be achieved. I am left thinking about the Butterfly or Obermeyer structures here, which would not provide protection from entrainment.

Page 49, first full paragraph beginning: "Under all alternatives…" May wish to better describe the methods of dewatering and diverting water and how they would take place. Would coffer dams be used, etc.?

8. Page 49, under Water Resources and Water Quality. Grouting should be addressed here. Would water quality impacts occur from grouting or would a coffer dam be constructed to minimize that impact?

Response I, continued

6. In addition to the section you reference, permanent impacts to riparian vegetation are further addressed in Section 4.2.7 (Wetlands and Other Regulated Areas). As noted on page 50 of the EA, "the Action Alternatives would . . . result in permanent impacts within regulated Waters of the U.S. These impacts include permanent removal of *riparian vegetation along the north and south river banks*, placement of fill on an island with emergent riparian vegetation, and placement of fill within the active river bed" (emphasis added). As noted in Table 4.3 on page 51 of the EA, 0.7 acres on the North Bank and 0.6 acres on the South Bank would be impacted. Mitigation commitments are discussed in this section, and will be further defined through the permitting process.

7. Please see response to items 4 and 5 above.

8. As noted in previous discussions, the anticipated final design and construction sequencing will involve the use of coffer dams to re-route or re-direct sections of the river from one side to the other to enable construction activities to occur in de-watered environments. It is anticipated that these cofferdams and their placement will consisted of mechanical styles, inflatable styles, or sheet piling. Placement of imported fill to create cofferdams will not be considered in the final design due to anticipated negative impacts on water quality. As noted in the response to Item 3 above, grout placement and curing will occur in areas that are dewatered and void of free flowing water. As such, impacts to water quality will be minimized to the extent practicable.

Comment I, continued

9. Page 49, under floodplains. It seems that if "measures to adjust heights of various system components" are available to minimize impacts to floodplains, they should be implemented and included in the project description to avoid any impact and bring impacts to a "no affect".

10. Page 50. Paragraph immediately under Table 4.2. What is the purpose of placing fill on an island with emergent vegetation? Is this to construct the new dam? Please explain. If this is material that is just being excavated and placed, an upland site should be used instead.

11. Bottom of Page 51. Last paragraph. Should remove "establishment of an upland buffer". I don't think establishing upland would meet the No Net Loss criteria for wetlands nor be proper offset for wetlands.

12. Page 52. Concerning Cultural Resources, we should immediately contact the Sponsor to inform them of the needs for Cultural work similar to that conducted for Daly Ditches. I imagine the same steps would need to be taken: Class III Cultural documentation, coordination with SHPO, etc. Note, this would have to take place prior to tampering with or construction of the project for propoer recording.

Response I, continued

9. Designs presented in the EA document are preliminary in nature. As final design efforts progress, the project team will consider and implement various measures to minimize or entirely avoid any effect on floodplains resulting from the project.

10. As noted in Table 4.3, impacts to the island would only occur under Alternative 5. These impacts would result because the island is situated immediately within the anticipated footprint of the proposed rock weir structure under Alternative 5. Fill material would include grouted rock used to construct the rock weir.

11. As noted in the Wetland Compensatory Mitigation Ratios document (dated April 2005) that is posted to the Montana Regulatory Program website, an Upland Buffer is considered one of several compensatory mitigation types. The Wetland Compensatory Mitigation Ratios document notes that an "*[u]pland buffer* refers to a required water quality buffer unless other functions are specified for a given site. Fifty (50) feet is the maximum width eligible for credit for sites with a modest slope (5% or less) with herbaceous cover. A buffer of up to 100' on sites with steeper slopes and natural shrub/tree cover may be allowed. Credit generated by upland buffers can comprise no more than 25% of the total credit for a given mitigation project."

12. BSB would appreciate any information you may have regarding cultural resource documentation and coordination activities conducted for a similar project.

Comment I, continued

13. Page 59, Table 4.4. Mitigation, fish timing, etc. should be worked out with resource agencies prior to project construction to show there are no "significant" affects. I don't think "considering" or proposing to determine with resource agencies goes far enough. See Topography, Vegetation, Fisheries, Water Quality (should describe control measures to be used, e.g., coffer dams, hay bails, etc.), Floodplains, wetlands, Cultural (coordination with SHPO now in case a "Daly Ditches" type report is required in order to allow adequate time).

Also, again in the Fisheries Section, I would like to see more information on screened intaks.

14. I believe it would help to see more specifics on the type, size, etc. of the proposed "fish" screen. Appendix D describes the screen somewhat under Alt 2 but not Alt 3 (Preferred Alt).

Matthew D. Vandenberg
Environmental Resources Specialist
Corps of Engineers, Omaha District
1616 Capitol Avenue
Omaha, Nebraska 68102-4901
Phone: (402) 995-2694
Fax: (402) 995-2697

Response I, continued

13. The details you note cannot be defined until the project progresses further in the final design and permitting phases. The project team is committed to meeting regulatory agency requirements prior to the start of construction.

    As noted previously, two sets of screens are being considered in the final design. The first set of screens placed in the intake chute will be used to prevent large debris from entering the collection box and impinging on the intake screens. The location, size and placement of the intake chute screens near the bottom of the intake chute will greatly aid in avoidance of entrainment of floating sticks, leaves and debris. In the collector box, actual intake screens such as Johnson T Screens will be used in series and each will be fitted with minimal screen opening sizes (nominally one-tenth square inch openings to preclude the entrainment of debris and fish fry into the intake piping). The final design will optimize the screen size and opening size to balance velocities, required diversion flow rates, minimize head loss and prevent entrainment of fish and debris.

14. Please see previous discussions regarding the intake chute and intake piping screens. The existing facility only utilizes bar screens with approximately four-inch openings. Moreover, FWP has stated that fish screens have not been employed on any existing intakes within the Big Hole River Basin. Discussions with FWP regarding sizing of the screens has resulted in preliminary decisions that one-tenth to five-tenth square inch screen openings will be satisfactory for minimizing impacts to fisheries. Since Alternatives 2, 3 and 5 consider a new intake located on the north shore, the discussions surrounding the selection of the final screen configurations is germane to Alternatives 2, 3 and 5.

Appendix E: Environmental Assessment

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